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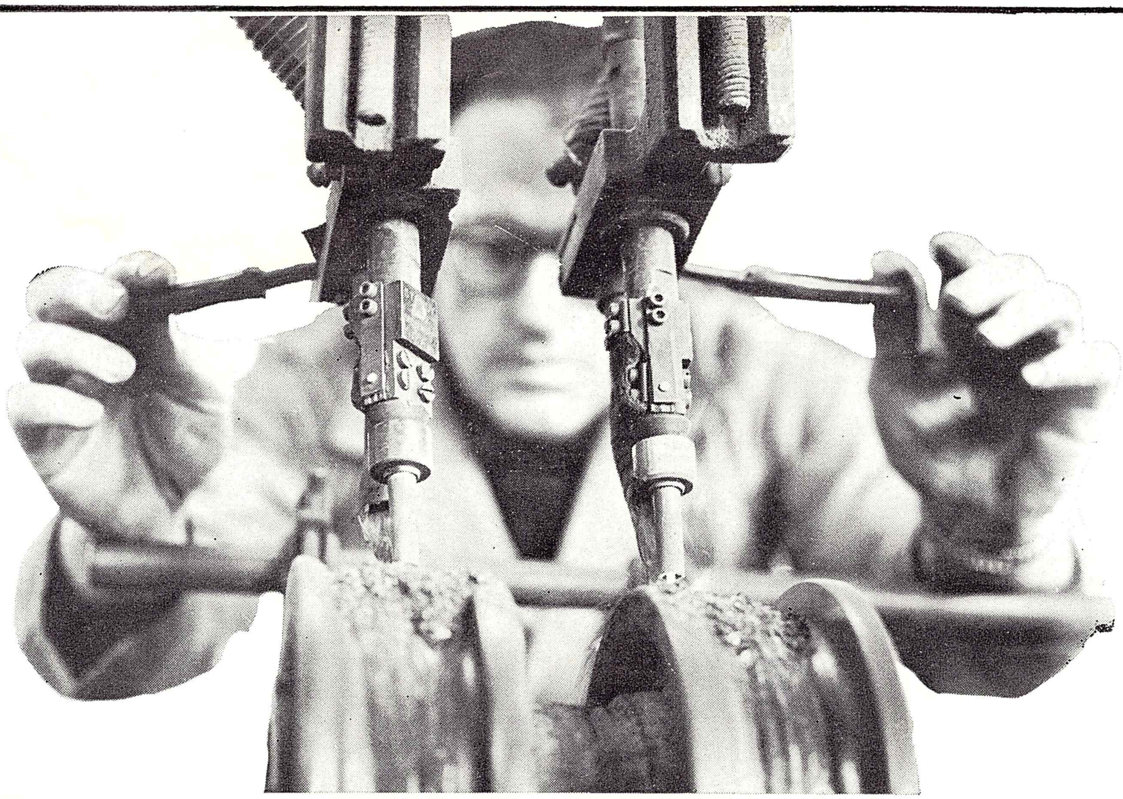
NEW ZEALAND
coal
VOL. 16: NO. 3: March, 1972.



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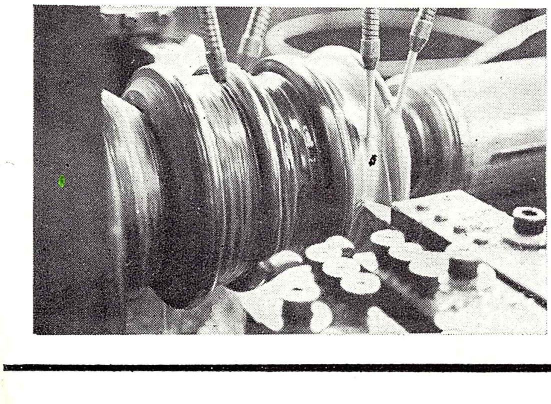

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NEW ZEALAND COAL

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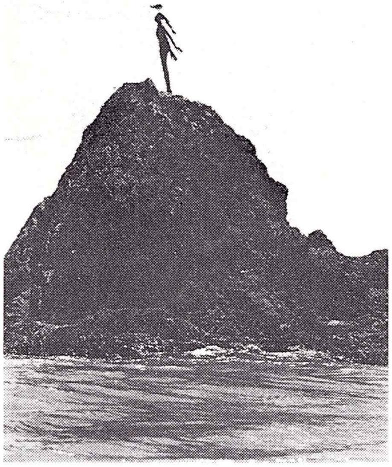
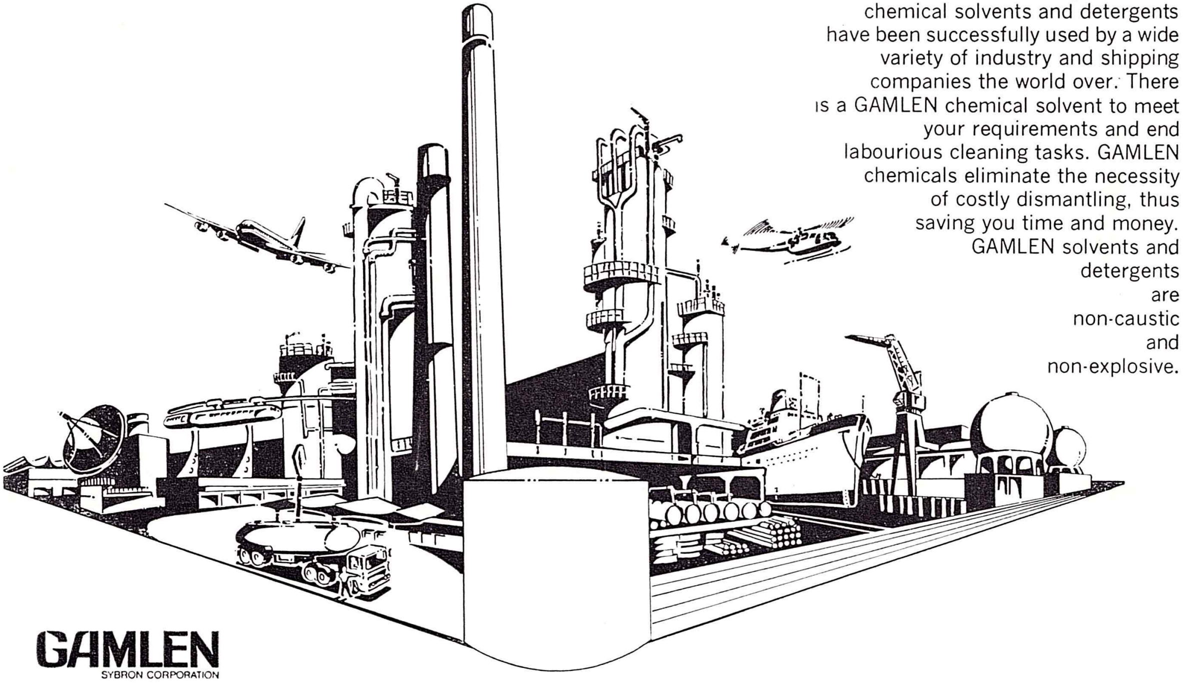
ON OTHER PAGES

	Page
Whakatane Hospital efficiency	2
Message from the Minister of Mines	4
Wetbacks and Water heating	5
Boiler Operators' Courses	7
Coal farm	9
Coal-burnt lime	11
Less smoke	13
Vintage and Veteran	14
The Westport coalfield	17
Matariki Geriatric Hospital	20
Stoker modifications in Auckland hospitals	22
Tauranga Hospital	24



OUR COVER PICTURE:

A seagull perches on the statue of Wairaka, a Maori woman who demonstrated her courage during the Great Migration. The statue stands on an island at the mouth of the Whakatane River, and was presented to the town by a former Minister of Mines, the late Sir William Sullivan.



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SAVING 400 TONS

Whakatane Hospital Efficiency

"We are confident that we have saved 400 tons of coal a year," says Mr L. Thomas, engineer at Whakatane Hospital. He gives credit for saving public money in fuel costs to a new boiler with a new type of electrical control.

The boiler, installed at the hospital a year ago, is an Economic, made in Hamilton by John Thompson. The hospital claims a first for New Zealand with the fitting of an Elliott Series 75 electrical boiler control.

The control varies the draught of air in accordance with the load. It does this so responsively, Mr Thomas told "Coal", that it senses a change in steam load and acts before an operator can see a change in the dial pointers of gauges.

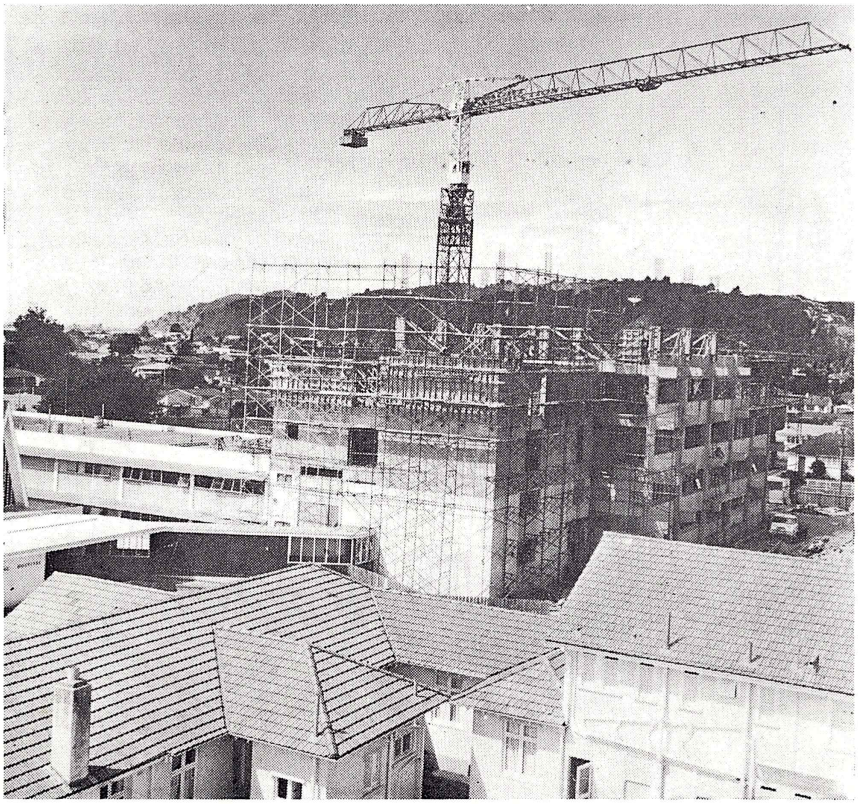
The boiler control opens and closes dampers to vary the draught for fine control and starts and stops the automatic stoker to control coal use.

"It makes the boiler a great proposition," Mr Thomas said. "It also makes the job a 'picnic' for the fireman."

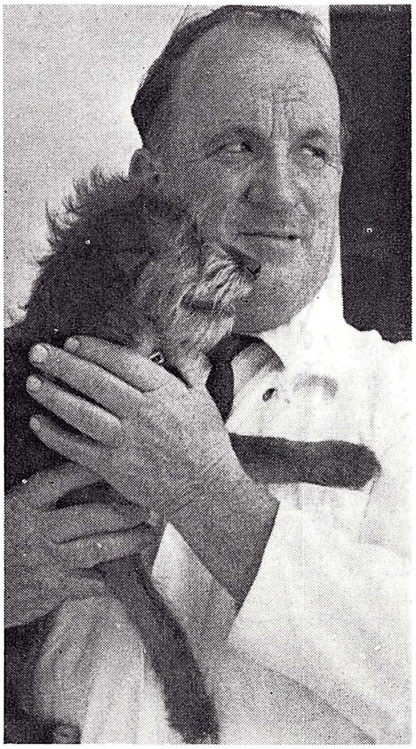
Since it was commissioned in November, 1970, the boiler has operated for a full year to enable conclusions to be drawn about its performance.

Rated for 9,500 lbs. per hour, the new boiler can actually deliver 10,000 lbs. and the one boiler does the work that formerly needed two 3,500 lbs.-per-hour boilers to provide.

Huntly State coal fuels the Whakatane Hospital boiler. For convenient ash removal an opening and slide allow ash to be removed.



The Whakatane Hospital is expanding with a new six storey building being put up to provide another 60 beds and clinical services.



Mr. Thomas, engineer at Whakatane Hospital, with the family pet.

There are no complaints of soot and grit emissions, Mr Thomas says. The stack has a Sirroco grit arrester fitted.

The new boiler has been fitted at a time when the Whakatane Hospital is expanding, with a new six-storey building being put up to provide another 60 beds and clinical services. This is in addition to the 187 beds already in use.

A staff of 14 under Mr Thomas is responsible for maintaining services for the hospital. There are four boilermen and a relief man who works the boiler one day a week.

Mr Thomas was one of the youngest hospital engineers in the country when he was appointed to the position at Whakatane in 1945. He is an enthusiastic resident of Whakatane now, enjoying the climate, which, he says, is mild. There is a comparative lack of wind for a New Zealand seaside town, and in his garden oranges, tamarilloes and pawpaws flourish and lemons "get mown over in the lawn".

Another link with the coal-mining industry for Whakatane is the statue of a Maori woman on a rock in the sea at the river-mouth. Presented by the late Hon. Sir William Sullivan, who represented the district in Parliament for 16 years, the statue commemorates Wairaka, a Maori woman in the canoe Mataatua which landed at Whakatane during the great Maori migration to New Zealand. The legend of Wairaka is that when the men became tired with paddling during a storm she seized a paddle and declared, "I will act the man!" — her example inspiring the flagging crew.

Sir William Sullivan was Minister of Mines from 1944 to 1957 and the Sullivan Mine at Denniston is named after him.

SHOULD BE VERBOTEN

Common Market-conscious Whitehall departments are being afflicted with some particularly excruciating "Eurospeke" jokes.

Housewife to coal-man: "Three sacks, s'il vous plait."

Coal-man: "Wot's all this s'il vous plait bit, then?"

"Well, we're joining Europe, aren't we? So we've got to learn to speak like them."

"Orl right then, how would you like it? A la carte or cul de sac?' '

—"Evening Post"

* *

MILLERTON MINING MONUMENT

A plan to convert Millerton, the Buller hillside site of a now all-but deserted mining township, to a mining village for tourists, is under study.

The Buller Chamber of Commerce has decided to seek more information on the tourist attraction proposal from the Buller County Council.

A sub-committee, comprising Messrs O'Keefe, G. Wood, B. MacDonald and Mrs G. Lukey, was appointed to investigate the scheme further.

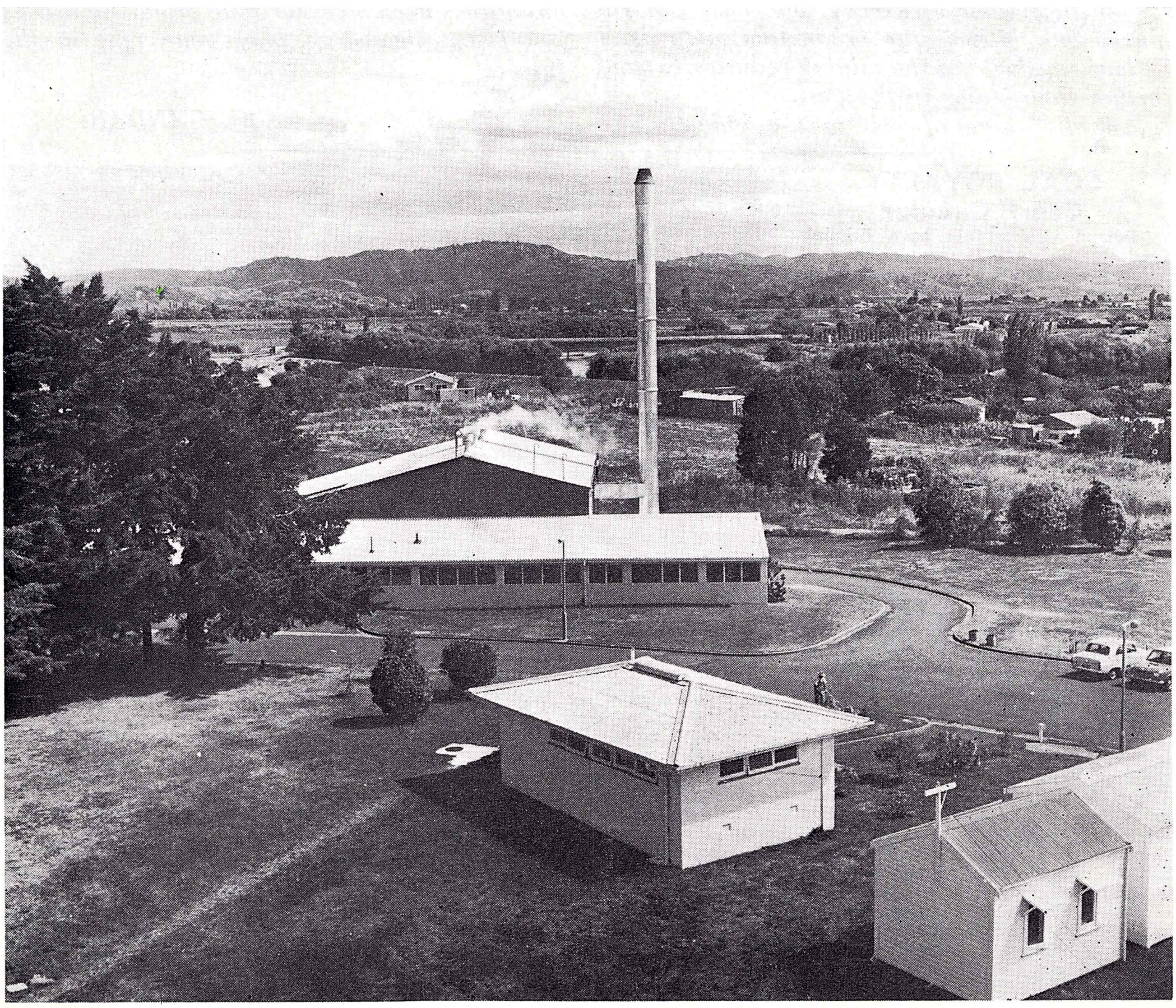
* *

COAL SCIENCE LECTURE

A gold medal, to be known as the Robens Coal Science Medal, will be presented every year in Britain to the speaker who gives the Coal Science Lecture.

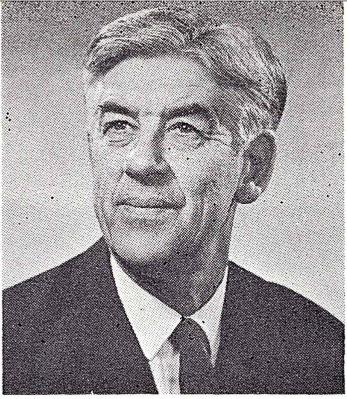
This was announced by the member for Science of the British National Coal Board, Mr Leslie Grainger, when the ex-chairman Lord Robens marked his "final association" with the coal industry by giving the 20th Coal Science Lecture on "Science and Coal — The Future".

Boilerhouse and engineering workshop at Whakatane Hospital. Note the lack of visible smoke from the stack.



FROM THE MINISTER OF MINES

MESSAGE FOR "COAL" MAGAZINE



The Hon. L. W. Gandar, Minister of Mines.

As Minister of Mines, I am pleased to have the opportunity of writing to members of the coal industry through "Coal" magazine.

I am particularly pleased to have become your Minister at a time when the coal industry is becoming more efficient through modernisation to enable it to compete with other fuels in product value.

This is especially true at the present time in the case of Ohai, Huntly and the West Coast.

With greater efficiency, and customer requirements determining production methods, I believe we shall see the mining industry expand further than it has in the past.

While those of you in the industry are meeting the challenge of the changes needed, I can assure you of my support to bring more efficiency into production.

I hope to meet as many members of the industry as I can when I visit some of the mines and depots. I am looking forward to this and to discussing the revitalisation of the industry with those whom I meet.

I have confidence in the future for coal, which as one of New Zealand's indigenous fuels has always been a cornerstone of our industries.

I am pleased to play some part in that future.

— L. W. GANDAR.

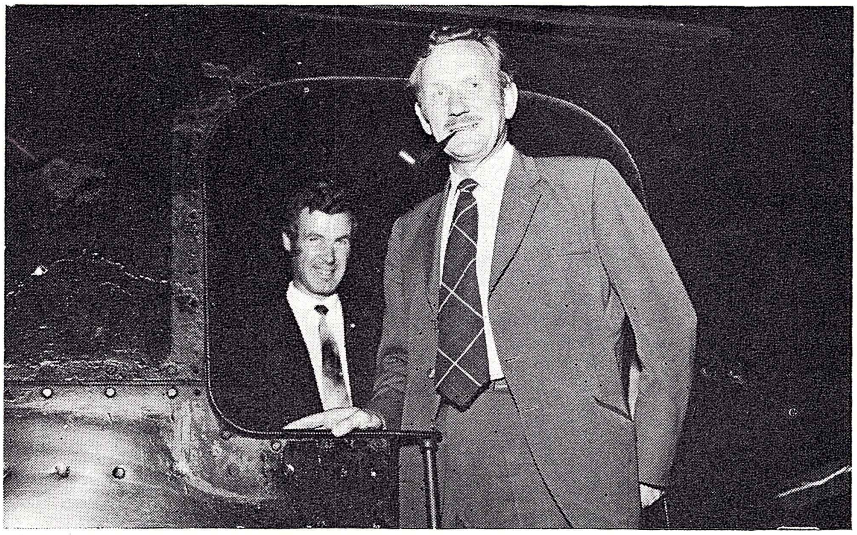
COAL ROYALTY
Court Circular

Midland mining folk gave Britain's Coal Queen Judith Hargreaves, a royal welcome on an all-action, three-day tour of South Derbyshire's mining world, the British "Coal News" reported in its January issue.

Judith "also wore beautiful jade jewellery given her by the New Zealand coal industry," the report says.

The Coal Queen's tour included visits to a hospital, a pit, a top mining machinery manufacturer, calling the "tune" at a big bingo session and a live BBC broadcast, as well as top-level wining and dining.

The story of Judith's tour was carried in all 18 editions of "Coal News" for all British mining areas, the editor said to "New Zealand Coal" when sending us a copy.



Mr Duncan MacIntyre, Minister of Lands and Forests, is another ministerial visitor to Shantytown who has travelled on the footplate of the former Mines Department railway engine there and drove it for 400 yards. Mr MacIntyre and a group of Parliamentarians when visiting the West Coast were entertained for an evening at Shantytown, the re-creation of a mining town of the goldrush era a century ago, by local people, many of them wearing period costume for the occasion.

"I thoroughly enjoyed our evening at Shantytown," Mr MacIntyre told "Coal". "I am impressed by what West Coasters have done here, and it is obvious that the Mines Department and Ministry of Works, in presenting this engine, have made a useful and worthwhile gift to the West Coast."

The engine came from the mine at Kaitangata and was transported to Greymouth and Shantytown by the Minister of Works. Since Christmas the engine has worked every day as part of the tourist attractions.

Shantytown was opened on January 23, 1971, and before the year was up more than 100,000 people had visited it. An incorporated society owns the tourist amenity and profits are used for extending the exhibits. A new street with further re-creations of features of the past is planned, plus extensions to the tramway for the engine to run on. Gigs and carriages have been bought in Christchurch.

WET-BACKS and WATER HEATING

Many homes rely on a wet-back attachment to the fireplace to provide cheap heat for the hot-water cylinder — in winter, the normal operation of the fire can give adequate hot water without using the electric element. This heat in the cylinder is not obtained for nothing — but the small extra amount of coal burnt to provide it, makes it very cheap heat indeed.

The New Zealand Coal Research Association constantly receives enquiries about wet-backs, their installation, the pipework to and from the cylinder, and the possible addition of radiators in the hot-water circuit. The basic principles of wet-back installations — relating to corrosion, natural circulation, back-syphoning, and disposal of excess heat — are described here to give background information to answer these enquiries.

Wet-Backs and Boilers

In its simplest form, the wet-back is a water-filled container behind or around a fire. The water is heated from the fire and the hot water flows by natural circulation into the hot-water cylinder . Such wet-backs vary in size and in construction. Wet-back attachments can also be fitted to most space heaters — sometimes as a pipe-coil inside the heater. Of greater heat output are the destructors or "chip" heaters and similar boilers used for water heating.

Types of Wet-Backs

The quantity of heat absorbed in the water depends on where the wet-back is relative to the hot fuel bed and on the type and size of heating surface. Generally, one sq. ft. of wet-back surface exposed to the heat absorbs 6,000 to 7,000 Btu/hr: energy equivalent roughly to that from a 2-kW heating element. A steady heat input of 7,000 Btu/hr will raise the water temperature in a 30-gallon cylinder from 60 deg. F. to 160 deg. F. in about 4½ hours.

More sophisticated wet-back arrangements with larger surfaces are capable of considerably higher thermal outputs.

Materials of Construction

Natural waters are normally corrosive to steel. Where water circulates around an enclosed system the water becomes passive and non-corrosive, but when fresh water is being continuously introduced the steel is not protected. Thus mild steel wet-backs and boilers are completely unsuitable with such a "direct" system, where fresh water passes through the wet-back and cylinder to the taps. (With a steel wet-back, an "indirect" system with a copper coil in the hot-water cylinder must be used — the boiler circuit is then enclosed and the tap water passes only through the cylinder, external to the coil). In most wet-back installations simplicity is essential and the extra cost and the extra complication of an indirect system would often not be acceptable.

Cast-iron is less subject to corrosion by fresh water than steel is, and wet-backs or boilers made of cast-iron have been found acceptable in direct systems where the water is not too aggressive. There is always some possibility, however, of rusty discolouration of the water. Copper is sometimes used for a wet-back, but stainless steel is becoming more common.

Cylinders are invariably made of copper and circulating lines between wet-back and cylinder are generally in copper.

Natural Circulation

Most wet-back systems supplying hot water to domestic cylinders depend on natural circulation. Such natural-circulation systems are simple and inexpensive, but there are pitfalls for the unwary. Pay careful attention to the basic principles.

Natural circulation depends on the fact that water expands as it heats up, becomes lighter, and tends to rise. Where there is a complete water circuit consisting of two vertical "legs", water will circulate around the system if one of the legs is higher in temperature than the other.

Typical Installation

Figure 1 shows a typical installation of a wet-back feeding a hot-water cylinder. The cylinder must be above the wet-back so that the heated water will rise and flow into it. In most cases, with a simple system of short pipes, the bottom of the cylinder should be at least one foot above the wet-back. With longer and more intricate pipework, the difference in levels will need to be greater — in an extreme case, six or eight feet may be required. In all cases, increasing the height of the cylinder gives more effective circulation. The water circulating lines should be effectively lagged to reduce loss of heat.

The heat that flows into the water in the wet-back ensures that the temperature of the flow line (leg AB) is higher than that in the return line (leg CD) and the water flows in the direction ABCD. The hot water entering the cylinder naturally rises to the top of the cylinder, and the colder water in the bottom of the cylinder flows out along the return line to the wet-back.

The flow and return lines must be of sufficiently large diameter for water to circulate freely around the system. The usual minimum inside diameter is 1 inch. Again, so as not to restrict the flow of water around the circuit, bends in the flow and return lines should be avoided. Where they cannot be avoided take care that they are "long-sweep" rather than sharp elbows, so that they do not restrict water flow.

Where the cylinder is remote from the wet-back or where more intricate pipework with several bends is required, pipe diameter may have to be increased.

Avoid any high points in the water lines where air pockets could accumulate and stop the water flow. The flow line should preferably slope steadily upwards to the cylinder. If a high point cannot be avoided, this must be carefully vented to release automatically any air which accumulates. The return line similarly should contain no high points which are not vented.

Connections into the Cylinder

N.Z. Standards Specification 720:1965 requires that pipe connections to a cylinder of capacity of up to 40 gallons shall have a minimum diameter of one inch.

Many local bodies recommend introducing the flow through an internal pipe which delivers the water into the cylinder at a high level, as shown in Figure 2. This arrangement is most effective in reducing back-syphoning.

Back-Syphoning

If the piping arrangement is not designed to prevent it back-syphoning can occur when the cylinder contains hot water and when there is little or no heat entering the wet-back from the fire. Figure 3 shows the worst

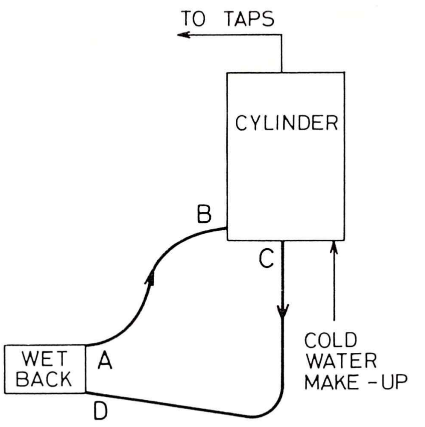


FIG 1: TYPICAL INSTALLATION

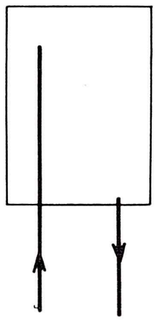


FIG 2: FLOW DELIVERED HIGH IN CYLINDER.

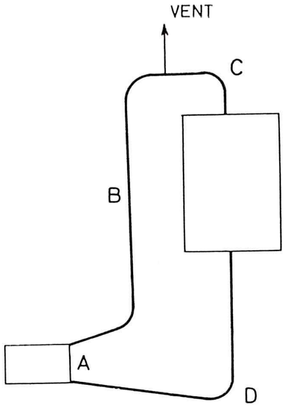


FIG. 3:
SYSTEM LIABLE TO BACK SYPHONING

arrangement for back-syphoning, where the flow line enters at the top of the hot-water cylinder. When the cylinder water is at a high temperature and when no heat is being supplied to the wet-back, leg CDA is higher in temperature than the leg CBA. Thus, water flows slowly around the circuit in the reverse direction to the normal flow. Heat is lost to the atmosphere as this water back-syphons and eventually the temperature of the cylinder water will be reduced to that of the atmosphere.

Systems designed to prevent back-syphoning are shown in Figures 1, 2 and 4. In Figure 1, the connections to the cylinder are at the bottom of the cylinder. The hot water in the cylinder is stored above this level and there is no tendency for the hot water to fall into the circulating pipe system. Figure 2 is a refinement of this. Figure 4 shows an installation where a high point (and vent) must be provided in the flow line (the flow line still enters the cylinder at the bottom.)

Other ways to prevent back-syphoning are:

1. Check, or non-return, valves can be installed in the water line so water can flow only from wet-back to cylinder. Such valves inevitably impose some resistance to normal water flow and they are not always sensitive enough to prevent completely the movement of water in the opposite direction. The action of the check valve can also be affected by any solid material in the water.
2. A 180 deg. bend which provides a high point in the flow line can be precisely positioned to be just above the level of water in the make-up tank. The one-way operation of this device depends on the uneven rate of water flow from wet-back to cylinder, so that the water is carried over the high point by the surges. In any back-syphoning the flow does not surge and the water does not rise to the level of the high point. In the best natural-circulation systems, designed to achieve a steady movement of water and to avoid any surging, this device obviously could not be tolerated.

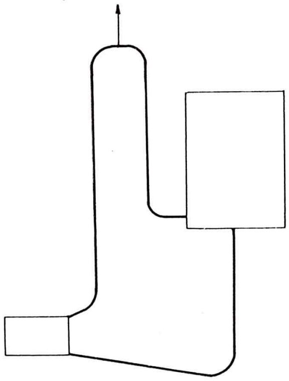


FIG. 4:
FLOW LINE RISING ABOVE CYLINDER

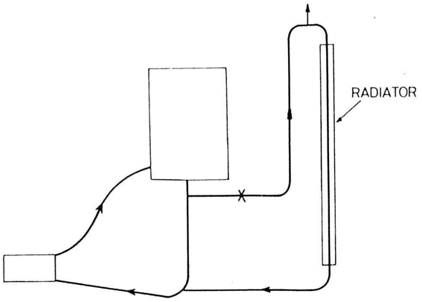


FIG. 5: RADIATOR IN SECONDARY CIRCUIT

Excess Heat

It is often difficult with wet-backs to balance the heat output in the hot water with the space-heating output from the appliance. Where the fire has been burning for some time at high output and where no water has been run off the cylinder, the water temperature in the cylinder rises and eventually the water may boil. This is to be avoided if possible, because of the noise and inconvenience and especially because of the wasted heat which simply blows out through the vent as steam.

Normally, the householder soon learns to organise the demand for hot water and prevent the cylinder boiling. Modifications to reduce boiling are usually designed to cool the water in the return line from the cylinder when the water temperature becomes too high. For example, if the cylinder is at a high level in the hot-water cupboard, a considerable amount of heat can be dissipated from the vertical, unlagged, return line, perhaps enlarged, and this heat released in the hot-water cupboard for airing purposes. Any such heat loss in the return line from the cylinder must occur at a level high enough to give a cold return leg and to ensure good natural circulation of the water around the system.

An arrangement which ensures a more definite loss of heat from the return line is shown in Figure 5, where a secondary circuit is arranged with an elevated radiator, perhaps in another room of the house. This secondary circuit operates naturally when the temperature of the return from the cylinder rises. The cooling in the elevated radiator ensures circulation in the secondary circuit and the cooling of the return leg ensures good circulation in the primary water circuit. The successful operation of such a system depends on the use of a radiator of a metal which will not be corroded by fresh water. A suggested type of heater is one made from (say $1\frac{1}{2}$ in.) copper tube, running from the ceiling to the floor, perhaps in the hallway, with a metal surface bonded externally to the pipe to ensure good transfer of the heat from the water into the room.

Normally, the secondary circuit will dissipate large quantities of heat only when the water temperature in the return line rises to a sufficiently-high level, but in practice there will be some circulation immediately there is any increase in temperature. If it is necessary to ensure that, at times, all the heat from the wet-back is directed into the hot-water cylinder, a gate valve (or similar valve with a low resistance to water flow when open) installed in the secondary circuit, can be kept closed.

Electrical Heating

Normally, a thermostatically controlled electric element will be installed in the hot-water cylinder as an alternative method of water heating. This will certainly be used in summertime.

When the wet-back is operating the electric heating can normally be switched off. Alternatively, the power can be left on, with the thermostat set at a low level. Thus, there is always some heat in the hot-water cylinder but at the same time there is ample thermal capacity in the cylinder to absorb the heat which the wet-back supplies intermittently throughout the day.

Wet-Backs and Radiators

The circulation of some of the hot water from the wet-back to radiators is often suggested. However, with the relatively small output from most wet-backs there is generally little heat available after the cylinder has taken its requirements and the use of radiators is seldom justified except perhaps as a means of disposing of excess heat.

Furthermore, suitable radiators are not readily available except in steel. Steel radiators would not be satisfactory with the direct systems generally used for heating the cylinder.

As there is unlikely to be sufficient output to supply both the cylinder and a radiator system, some householders may prefer to use the heat from the wet-back for house heating instead of in the hot-water cylinder. A heat output of 7,000 Btu/hr would provide sufficient heat for radiators of about 36 sq. ft.

If the movement of the water through such a radiator circuit depends on natural circulation, pipe diameters of at least 1 in. would be required and the radiators would have to be installed in an elevated position to provide the necessary cold leg to promote circulation. A closed system would normally be used and steel radiators would be satisfactory for this service.

If the householder can afford a circulating pump ($60-$80), a pumped system with $\frac{1}{2}$ in. pipes could be used. Again, the system would normally be a closed one and steel pipes and steel radiators could be used. With a pumped system the radiators need not be elevated as in a natural-circulation system.

Space heaters obtainable which can be fiitted with wet-backs are:

New Wonder
Belmac
Heatamatic
Mackay Fulvue
Juno

A number of wet-backs are made for fitting to open fireplaces. Inquire from your plumber for details.

BOILER OPERATORS' COURSES

The schedule for the 1972 boiler operators' courses organised by the N.Z. Coal Research Association has been tentatively set as:

MAY — Rotorua.
JUNE — Ashburton, Auckland, Meremere.
JULY — Dunedin, Invercargill.
AUGUST — Christchurch, Hamilton, Nelson, Wanganui.
OCTOBER — Auckland.

School caretakers' courses are also conducted in most of the larger cities, either in May or early in June.

For details consult the N.Z. Coal Research Association's local fuel technologist, or the Director, N.Z. Coal Research Association, P.O. Box 3041, Wellington.

Tyre pressures in KILOPASCALS under Metric system

The Metric Advisory Board has declared its choice of the "pascal" as the metric unit which New Zealanders will use in future to measure pressure.

The pascal and its multiples will, therefore, supersede the various ways by which pressure is measured under the Imperial system, the most common method being in pounds weight per square inch.

The pascal is named after the 17th century French mathematician and scientist, Blaise Pascal, who is best known for the part he played in developing the barometer and the measurement of air pressure.

The pascal is a very small unit, equal to one Newton per square metre. The Newton is the unit of force in the international metric system now being introduced gradually in New Zealand.

The pascal will be encountered mainly in its multiples. In measuring the pressures in motor vehicle tyres, for instance, the unit will be the kilopascal, that is one thousands pascals, the written abbreviation for which is "kPa". Pressures recommended by tyre and vehicle manufacturers will be in kilopascals instead of pounds per square inch as at present and motorists will have to become accustomed to the use of gauges marked in kilopascals as they are gradually brought into use.

One pound per square inch is equal to 6.89 kilopascals, so that a tyre now needing a pressure of 28 pounds per square inch will need to be inflated to a pressure of 193 kilopascals.

The pascal will also be used in due course for measuring the pressure of gases and liquids in containers such as gasholders, cylinders for industrial and sporting uses, soda syphons and pressure cookers.

Explaining the Metric Advisory Board's decision that the pascal be the preferred unit for pressure, the chairman, Mr I. D. Stevenson, said that the other fairly well-known unit of pressure now in use, the bar, would still be recognised and would continue to be used in some special areas, such as in meteorology.

The bar is equal to one hundred thousand pascals, which is 100 kPa.

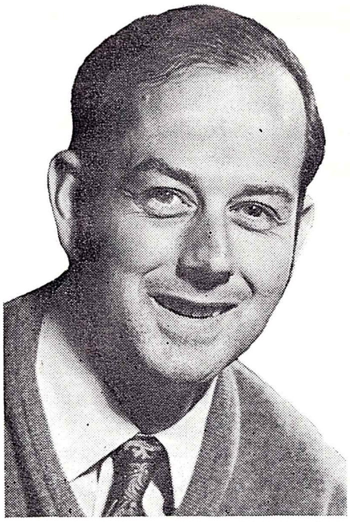
Mr Stevenson said that from a scientific point of view a special virtue in the international metric system as it is being adopted in New Zealand is what is termed its coherency. In this context coherency means that units for complex quantities — like the pascal for pressure — were derived by multiplying or dividing the basic units without the need for further multiplying factors.

"The pascal," he said, "is one of these coherent units and it is by far the most suitable for all calculations concerning pressure. It is being adopted in other countries now converting to the metric system or preparing to, and it will be mandatory in some countries, so that from the point of view of world trade, it is to New Zealand's clear advantage to conform."

—Information and Press Section, Tourist and Publicity Department, Wellington.

FUEL TECHNOLOGISTS—

Coal Research Association appointment



Mr D. S. Wilkes, C.Eng., M.I.Mech.E.

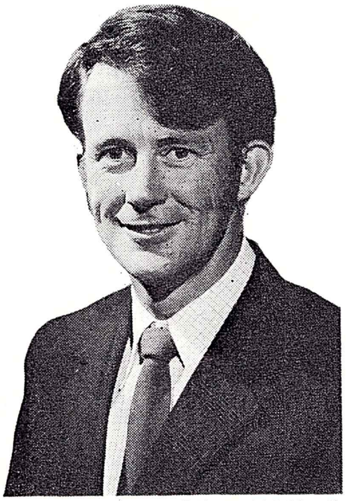
— Hamilton —

Mr D. S. Wilkes joined the Coal Research Association with a background of mechanical experience in electricity generating stations. He was born at Portsmouth in England and was educated at the Portsmouth Technical College while working with the Central Electricity Generating Board as a student engineer. After qualifying he worked in coal-fired generating stations for six years and then came to New Zealand.

Mr Wilkes worked with the N.Z. Electricity Department for two years at Meremere and Auckland, and then spent two years with N.Z. Steel Ltd., as workshop and service engineer before joining the Coal Research Association.

— Auckland —

Mr J. M. Jeromson gained his mechanical experience as a marine and hospital board engineer. After an apprenticeship with Cable & Co. in Wellington he sailed for five years in Shell Co. tankers. He qualified for his chief engineer's certificate and travelled widely throughout the world in the course of his sea time. On going ashore Mr Jeromson worked for the Wairarapa and subsequently the Thames Hospital Boards until appointed mechanical engineer to the Auckland Hospital Board. He joined the staff of The Coal Research Association as a fuel technologist in May of last year.



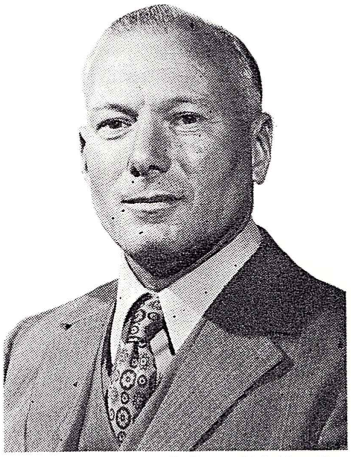
Mr J. M. Jeromson, C.Eng., M.I.Mar.E., M.N.Z.I.E.

Christchurch —

Mr A. L. Henry joined the N.Z. Coal Research Association after a career in marine engineering. He won a Callendar Scholarship for further engineering training while attending the King Edward Technical College in Dunedin, and was apprenticed with the Dunedin City Corporation in the transport and electricity departments. His apprenticeship period included two-and-a-half years with the R.N.Z.A.F. in precision engineering.

After working with Stevenson & Cook Ltd., ship repairers at Port Chalmers, he went to sea as a junior engineer. He rose to chief engineer serving with the Bank Line and Port Line. Going ashore in 1958, Mr Henry was a fuel engineer with BP Oil Co. for a short time until appointed Australian Government engineer and ship surveyor, New Guinea, with responsibility for Lloyds and government surveys of coastal and overseas ships. Including supervision of government and coastal shipping, the position entailed responsibility for an annual expenditure of $80,000.

After seven years in New Guinea Mr Henry returned to New Zealand for health reasons and took a position in the head office of the Marine Department checking the design of pressure vessels and undertaking ship surveys. For a period before joining the Coal Research Association he was in business on his own account as a marine surveyor and insurance assessor for marine and industrial plant.



Mr A. L. Henry, C.Eng., M.I.Mar.E., A.N.Z.I.M.

Railway Sleeper Nails

"A number of railway sleepers had nails with heads the size of lead-headed nails with one or two numerals embossed on them," writes Mr R. E. Hann, of 44 Winton Street, Christchurch.

The numbers, Mr Hann continues, indicate the year when the sleeper was placed on the track. For example, "16" would show the sleeper was placed in 1916. The last year they were used was 1927.

Mr Hann hopes to build up a comprehensive collection of these nails, and asks readers of "Coal" to write to him if they come across them. He makes the point that old sleepers may be re-used at some mines or tramways.

SILVER JUBILEE

This year, the British National Coal Board chalks up 25 years of existence — 25 years in which the industry has changed out of all recognition.

In 1947, the private mines were worked by hand; they were uncomfortable to work in; many were inefficient; and the miner's lot was not a happy one.

Today's modern, mechanised pits are safer, lighter, easier to work in, and far more productive than in the old days.

It is still a rugged life underground. But 25 years of progress in mechanisation, safety, training and industrial relations have taken a lot of the slog out of mining — without taking away the personal relationship between man and coal that has made the mine-worker a special breed

—British "Coal News", January, 1972.

DEVELOPMENTS IN COAL HANDLING

The N.Z. Coal Research Association has issued a brochure describing the results of their research and development in the handling and storage of coal. Designed for distribution to engineers and architects, it contains five recent papers published by the Association on pneumatic conveying, the traversing screw conveyor and screw conveyors. The brochure is available on request from N.Z. Coal Research Association, P.O. Box 3041, Wellington.

COAL FARM

successful private opencasting

Farming and coal? — A successful private enterprise venture in both exists at Huntly, stronghold of State mining in the North Island.

Terry O'Reilly operates an opencast coal-mine at River Road, two or three miles out of Huntly town, and his brother Phil farms the property. Terry helps out with the milking or other farm chores as occasion requires and Phil lends a hand at the mine.

In severely undulating country there is approximately 80 ft. of overburden on top of the 10 ft. seam of sub-bituminous coal, carrying 150 dairy cows, 100 sheep and 100 steers. The property covers nearly 600 acres.

The dairying operations of the mine are even further extended through the coal sales, most of the mine's market being the Te Awamutu Dairy Co.

The mine began in 1957, operated by Mr Phil O'Reilly, the brothers' father, and supplied Hamilton gasworks with coal for 13 years until the works changed to the use of natural gas. This was O'Reilly's No. 1. Mr O'Reilly senior was a mine manager at Rangitoto until he went in to partnership with Stokes Bros. to mine the coal at Huntly. When Stokes Bros. withdrew from the partnership in 1958, Mr O'Reilly carried on with a lease from the County Council.

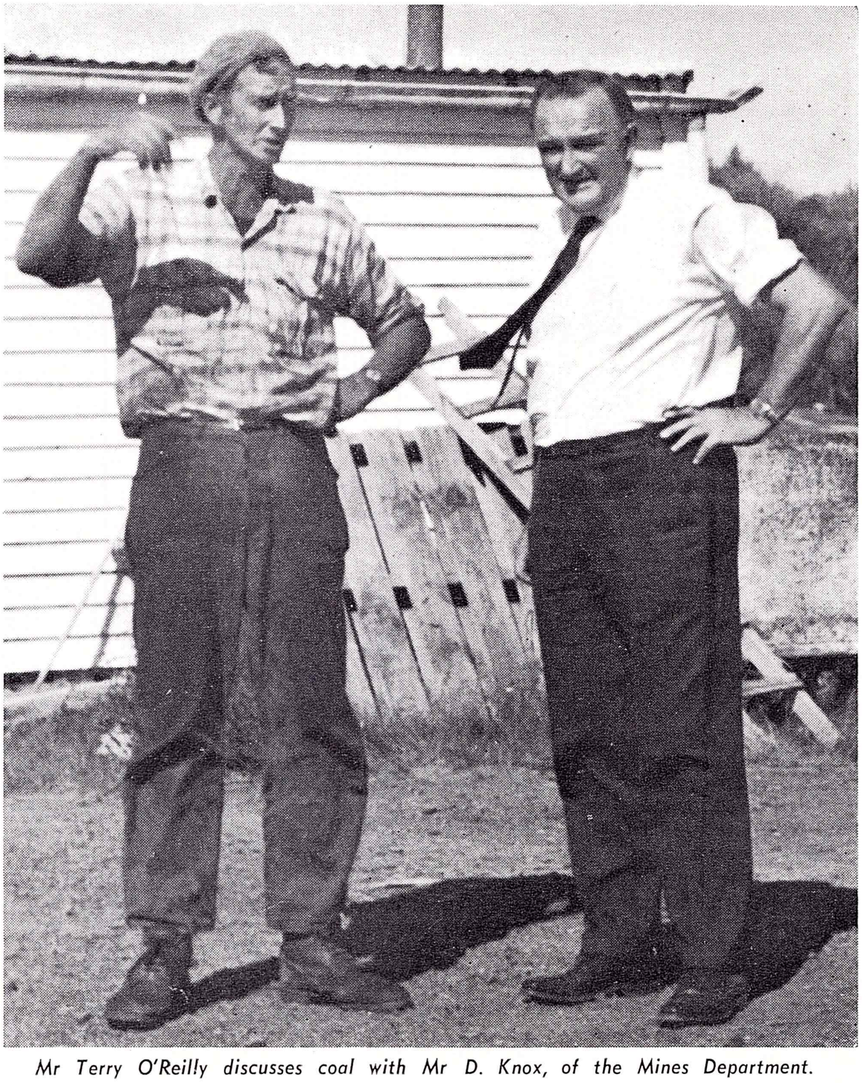
It had been considered impossible to put a road through to the coal but the O'Reillys succeeded although the 68 chains of road they built was extremely steep for loaded coal trucks to edge their way down in very low gear.

Mr Terry O'Reilly "smelt coal" when working for Cable Price Downer at the Kimihia State opencast mine at Huntly before moving to the family mine. Mr J. Patrick is the only employee and he works as a driver of some of the earth-moving machinery.

"Four old D8's, two trucks, a Cat 933 Traxcavator, and a Smith's 10 navvy and dragline," Mr O'Reilly said when we asked what machinery there is to drive. The D8's are caterpillar bulldozers, the Traxcavator is a track-mounted front-end loader and the dragline has a 10 cubic feet bucket. While the machines are not new, they have been tried and tested by time and are highly reliable.

The crushing and screening plant was designed and built by Mr Terry O'Reilly himself. Fully automatic, the plant operates by itself, producing nuts, household coal and upgraded slack.

Some of the clay from the overburden is sold to the Huntly brickworks.



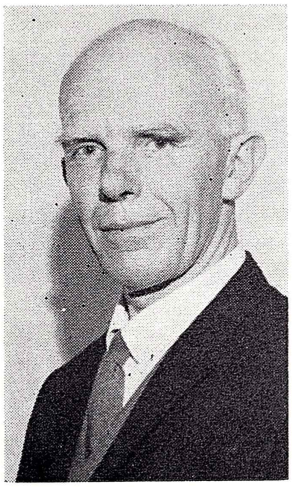
Mr Terry O'Reilly discusses coal with Mr D. Knox, of the Mines Department.

The successful operations of O'Reilly's mine, in the heart of the State mines area have not just happened. Mr O'Reilly can talk of the days when the mine opened and against fierce opposition had to offer coal in Hamilton at a profitless price of £2-18-0 ($5-80c.) a ton in order to win orders.

OBITUARY

MR J. O. ELPHICK

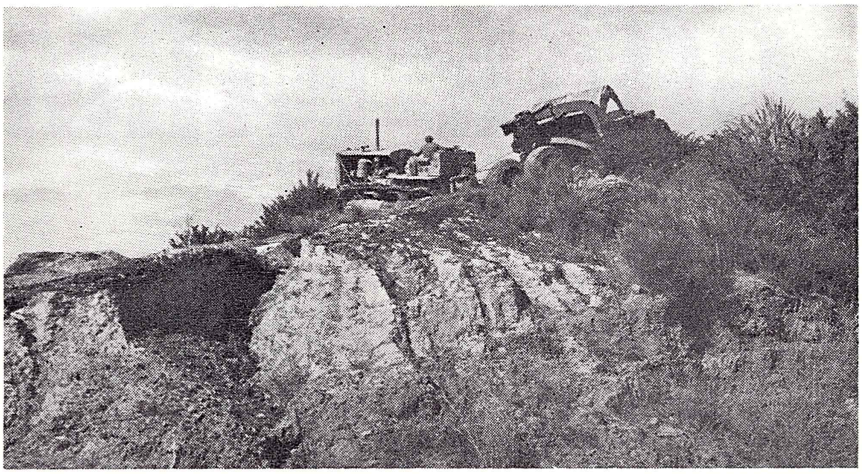
The recent, sudden death of John Elphick, chief chemist of the N.Z. Coal Research Association, came as a shock to colleagues and friends. A serious illness had kept him away from work for about nine months in 1970, but a miraculous recovery in hospital and gradual rehabilitation seemed to have restored the old Elphick.



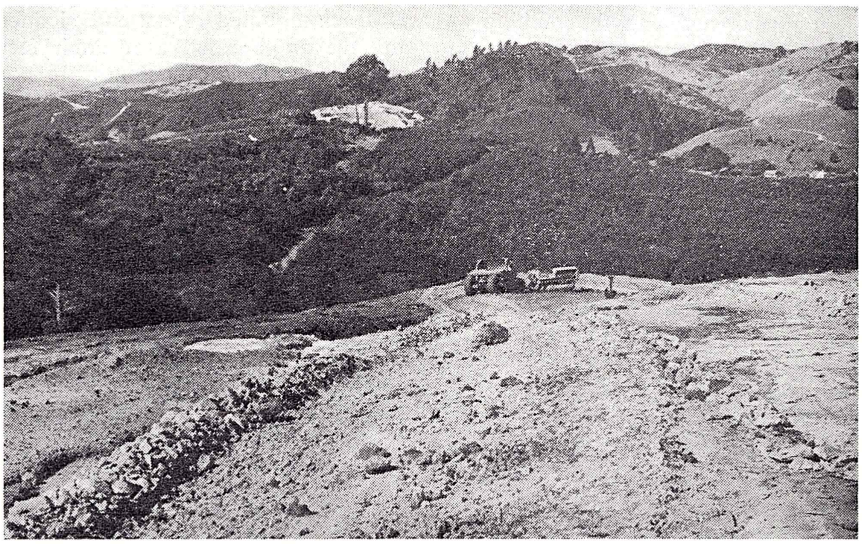
John Elphick devoted most of his working life to the chemistry of coal and he is well-known for many publications on the analysis, geology and properties of New Zealand coals. He worked initially in the Dominion Laboratory (later the Chemistry Division of D.S.I.R.) under Mr W. G. Hughson, and he transferred to the Coal Research Association on its inception in 1967.

As chief chemist for the Association, he was responsible for the organisation of the annual sampling programme in which coals from all mines in New Zealand are sampled once every year, and his was a vital role in the changing emphasis of the Association's chemical work towards more fundamental research — in coal moisture, reactivity and the study of coal reactions.

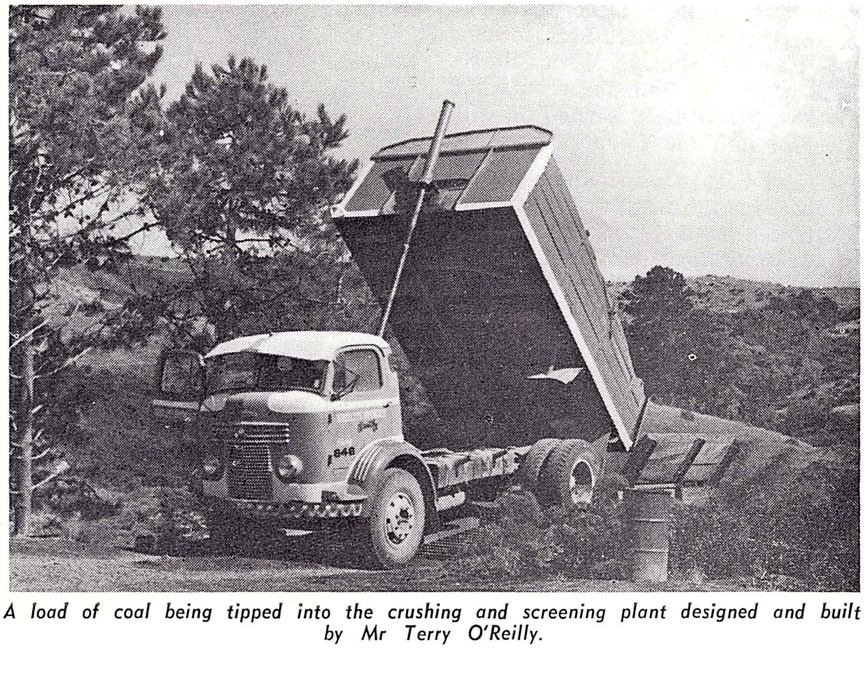
He will be sorely missed by friends in his many areas of interest which include sailing and rifle shooting. In the coal industry we will find his standing, his knowledge and experience hard to replace.



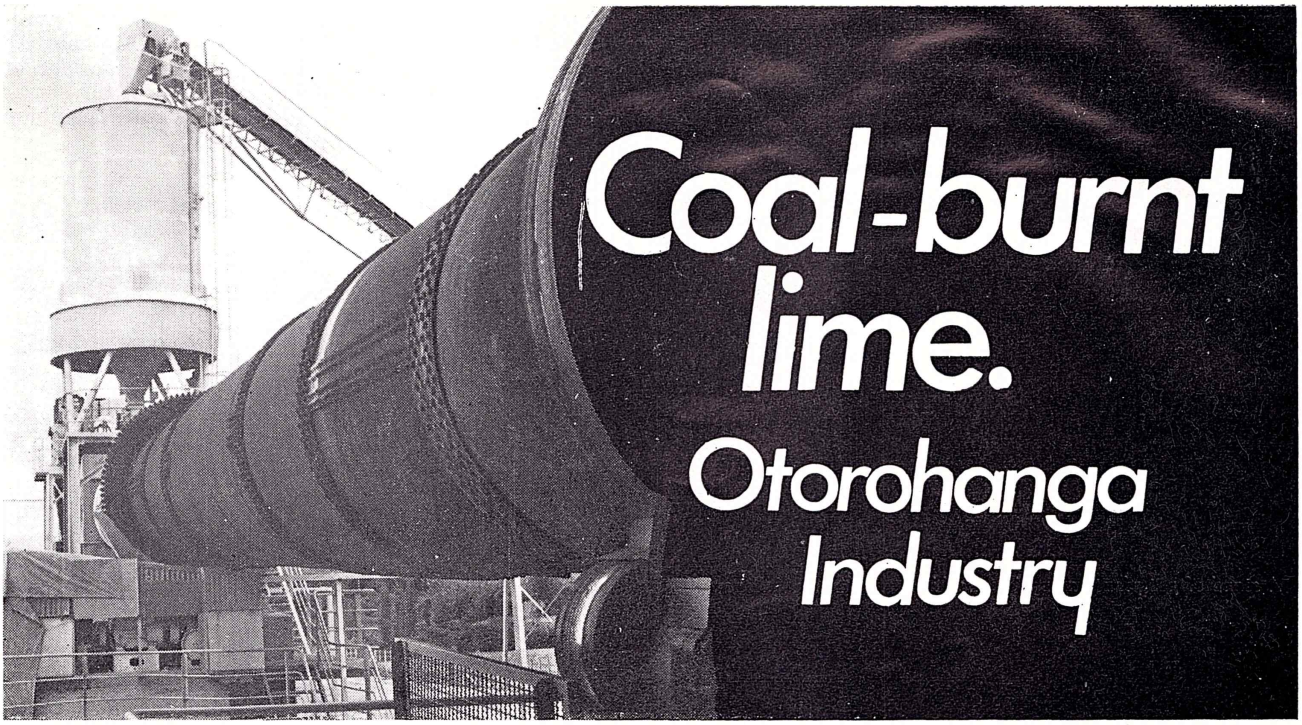
Approximately 80 feet of overburden on top of the 10 foot seam of sub-bituminous coal.



Severely undulating country.



A load of coal being tipped into the crushing and screening plant designed and built by Mr Terry O'Reilly.



Coal-burnt lime.

Otorohanga Industry

The trunnions and gears of the kiln were made in Dunedin in 1918 and came to Otorohanga from the Milburn cement works.

"One of the cleanest and tidiest limeworks in the world," is what Dr. N. V. S. Nibbs, an internationally-known consultant from England said when he saw McDonald's Lime Ltd. at Otorohanga.

Not only are all possible working areas there swept and tidied, and the floors and windows polished, but a stand of pot plants alongside the kiln gives a delightful touch of greenery to otherwise utilitarian surroundings.

"The men like working in these conditions — they keep it this way," Mr J. Vellenoweth, the works manager, told "Coal". His workplace in the office block also has a garden outside to brighten the appearance.

Beginning operations in 1968, the works are geared to produce 20,000 tons of oxide and hydrated lime per year. The bulk of the oxide goes to N.Z. Steel Ltd., the hydrate to freezing works and sugar manufacture and water treatment, and a small quantity is used by local farmers.

Otorohanga lime is burnt lime, unlike the chemical ordinarily used in farming and because half the weight is dissipated in the burning operation it is cheaper to process it near the limestone deposits than to transport it to Glenbrook in its raw state.

The proximity of adequate water and of the main railway line for transport to Glenbrook to the site of the works at the northernmost point of lime deposits in the area decided the choice of site.

The township of Otorohanga supplies labour and by providing jobs for 14 men the works rate as the town's second major employer — second only to the caravan manufacturing and exporting firm of Munro's Caravans.

Rotowaro Peas

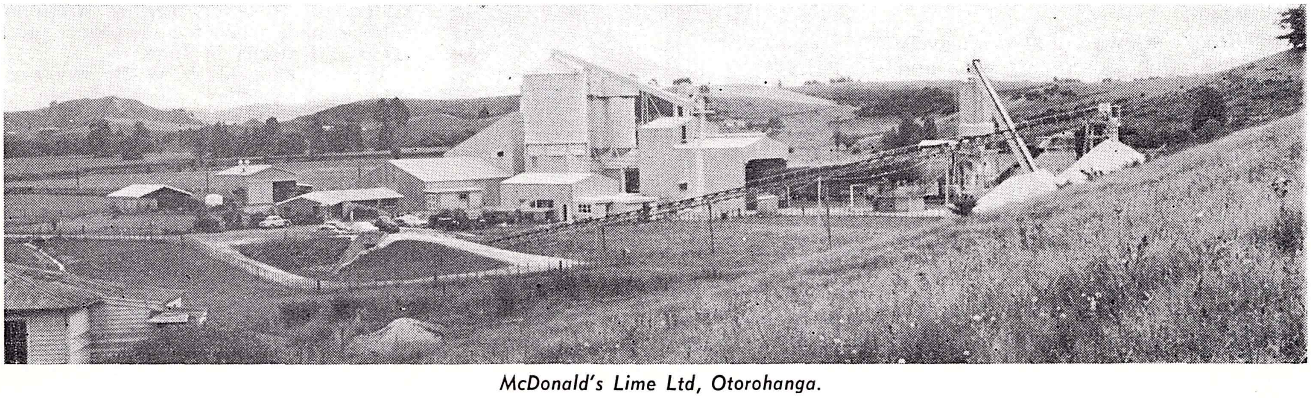
Rotowaro peas fuel the kiln and the incoming coal is stored in an underground bunker where it can be

A further product of the works is kept dry. The coal is mechanically transported and fed to the kiln and the whole burning process is supervised from the control room adjacent to the kiln. There temperatures at different points, motor currents and all other operations are monitored and recorded on a strip chart recorder. Monitor lights warn of any fault as it arises.

The lime arrives crushed and washed, screened to $1\frac{1}{4}$ in. size and from the stockpile the feed bin is topped up every eight hours, at the end of shift, when the kiln is working.

The trunnions and gears of the kiln were made in Dunedin in 1918 and came to Otorohanga from the Milburn cement works.

The burnt lime from the kiln is stored in a 1,000-ton silo before packing and transport by rail to Glenbrook.

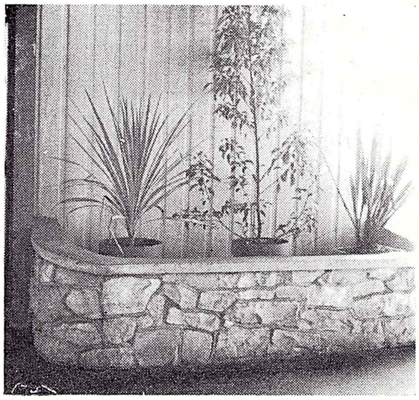


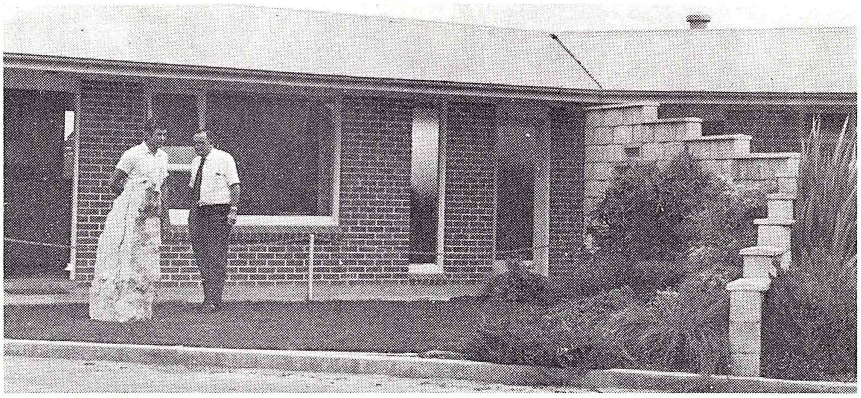
McDonald's Lime Ltd, Otorohanga.

lime sulphur, used in horticultural sprays. A small plant in the Otorohanga complex makes about 500 drums a year which is sufficient for the whole requirements of New Zealand.

Another use for burnt lime which is being tested at present is for road stabilisation. Sample strips of road have been treated in conjunction with the Ministry of Works and local bodies.

Staff morale is hight at the Otorohanga limeworks, Mr Vellenoweth told "Coal". There is no shortage of labour. The works has a tug-o'-war team which has become the champion team in the Waikato.


A stand of pot plants alongside the kiln.


Mr J. Vellenoweth, works manager at McDonald's Lime Ltd discusses coal with Mr D. Knox, fuel technologist with the Mines Department. Mr Vellenoweth is standing behind a block of limestone set into the lawn outside his office.

MANY USES FOR COAL DUST

"Tinting beer bottles!" was the answer Mr J. McCabe, manager at Webb Refineries (Auckland) gave us when we asked him what use is made of coaldust.

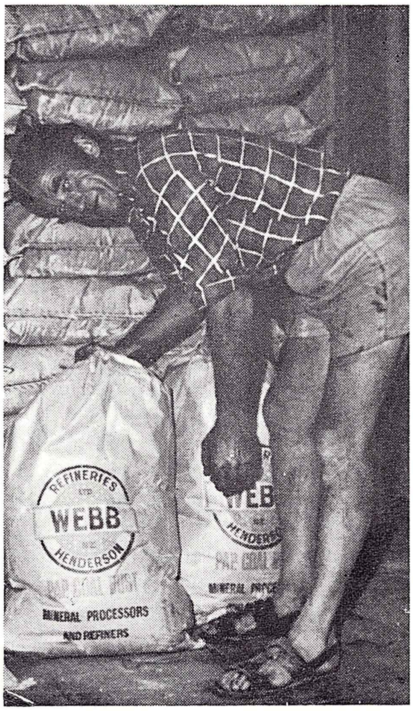
The refinery converts coal to dust for a variety of uses.

Among these uses are as an ingredient in battery cases and mixing in sand for casting, Mr McCabe explained. In ferrous casting the coaldust is mixed with the sand as a parting compound. This stops the sand from sticking to the casting. Webb Refineries supplies coaldust to foundries throughout the North Island.

Coaldust can also be used in glass manufacturing to heat up dead spots in a furnace as well as for tinting glass. Hence, its use for tinting beer bottles, a process which is not in use at present but is one which could be used again.

Paparoa coal was used exclusively until that mine closed last year and coal from the Sullivan mine at Westport has taken its place.

The refinery was set up in 1939 to service industry with a variety of earths and minerals. When it was established the building was in relatively open country but the expansion of Auckland has seen this area, the suburb of Henderson, gradually become more and more built up and the refinery surrounded by other industries.



Mr Steve Polman, in charge of production of coaldust, sacked and stacked, at Webb's Refinery.

Four men are employed in the plant, and among other duties they convert 500 to 600 tons of coal a year into coaldust and pack it in to multiwall bags for distribution. "The company's business is to produce dust" — Mr McCabe says, of his firm's association wiht coal.

"COSY COAL"

Coal Merchants' Advertising

"Cosy Coal" permeated the quarterly meeting of the North Island Coal Merchants' Federation on February 29. The members considered a "Cosy Coal" theme for advertising, including the use of new packaging to promote domestic coal sales.

White multi-wall bags for 56 lb. and 28 lb. packages, made by New Zealand Forest Products Ltd. with a pink-printed design which was strongly favoured by the meeting, were demonstrated.

"Cosy Coal" is printed on the gussets, and space is left on the front for the distributor's name and the type of coal in the pack. Samples will be sent to present users of multi-wall bags to encourage use of the new bag.

Television and showcard advertising will also be used to promote "Cosy Coal".

Metrication of coal packaging was also discussed, members being in favour of coal packages of from one to 10 kilograms and large sizes in multiples of 10 kilograms. However, further decisions will be made when the merchants meet again at Rotorua in June.

The president, Mr L. W. Bonney, presided at the meeting, which was held at New Plymouth.

* *

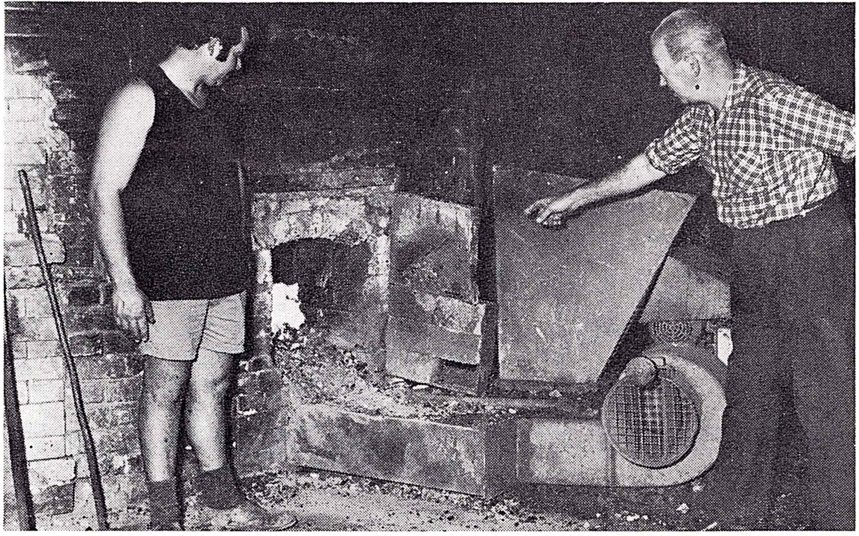
COAL HEAT

Solid fuel still heats nearly half Britain's homes — and the Coal Board have the weapons to hold and even increase their business, says the chairman of the British National Coal Board, Mr Derek Ezra.

Next year the Board hope to push up sales of open fires and room heaters to about 200,000, he told the Domestic Heating Society in London.

LESS SMOKE

AUCKLAND FIELD TILES



Better combustion control, less smoke and less labour: advantages favouring the change from hand to automatic firing at Mackay Field Tiles, Auckland. Bill Mackay (left), son of Harry Mackay, owner (right).

Mackay Field Tiles have been in business for 45 years making field tiles at Takapuna in Auckland. A change in methods was introduced four years ago when one of the three kilns was switched from hand-firing to automatic, using Vale underfeed stokers.

"We wouldn't go past it," Mr Ian Mackay, manager for three years in this family business, told "Coal" enthusiastically when describing the works' experience of automatic firing. Better combustion control, less smoke and less labour were advantages listed by Mr Mackay in favour of the change.

Another kiln is planned for conversion to automatic stoking soon. The eight hand-fired furnaces reduce to four when converted.

Eight tons of coal are used for each "burn" when a kiln full of pipes is heated for 36 hours to expel moisture from the clay and is then raised to 1100 deg. C. for finishing. The four-in. clay field tiles take two days to cool sufficiently before they can be removed after the heating.

Mr Harry Mackay, the managing director was a farmer who began manufacturing field tiles to fulfil a market need . The works use deposits of clay on the site and the raw material is stockpiled once a year with a Z100 International Drop. Seven staff put through five kilns-full of pipes a month — 60,000 pipes a month ,using 400 tons of coal a year.

Who ever heard of sweet young things in white slacks going down a coal mine? It's like finding ice cubes in Hell or a goat in a tiger cage.

TWO VISITORS WORE WHITE SLACKS IN A COAL MINE

Reprinted from the "Nelson Evening Mail", February 10, 1972.

Well, that's just what happened at the Sullivan Mine, near Westport, last month.

In a quiet way the State Coal Mines are doing a grand public relations job conducting visitors and holiday-makers through the workings at two or three points in the Westport and Greymouth areas.

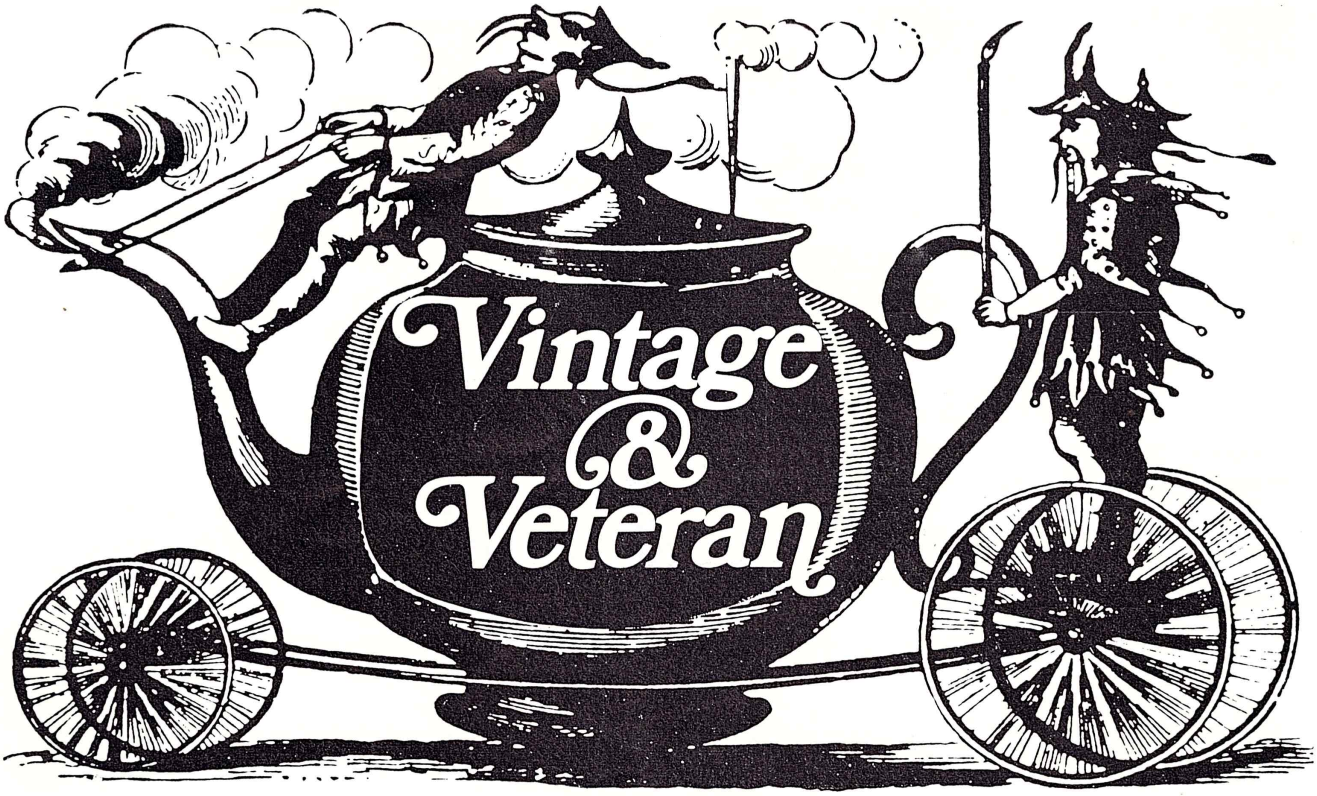
After an hour or two — a half-mile into the workings, with 2,000 ft. of rock over your head — you lose a lot of preconceived notions about how coal is won.

The idea originated with the Buller Chamber of Commerce and was approved by the late Mr T. P. Shand when he was Minister of Mines. This year a Westport passenger-service firm, Buller Motorways Ltd., with mini buses has taken many visitors on half-day trips to see the sights at Denniston and to go in the mines still working, Escarpment and Sullivan.

If the original proposers of this scheme for public visits to coal mines were sceptical through over-familiarity, the episode of the girls in white slacks shows how keen the public can be.

At the Sullivan mine Mr Barney Kidd, of Westport (who gets a lot of chaffing from his mate these days as "Guide Rangi"), was aghast last month when a car rolled up at the appointed time and out stepped two young women in their best holiday gear, including snow-white slacks. Though the obvious hazards were pointed out they were adamant that they wanted to go through the mine, and afterwards were not the least fazed by the experience. Now, the miners tell this tale with awe.

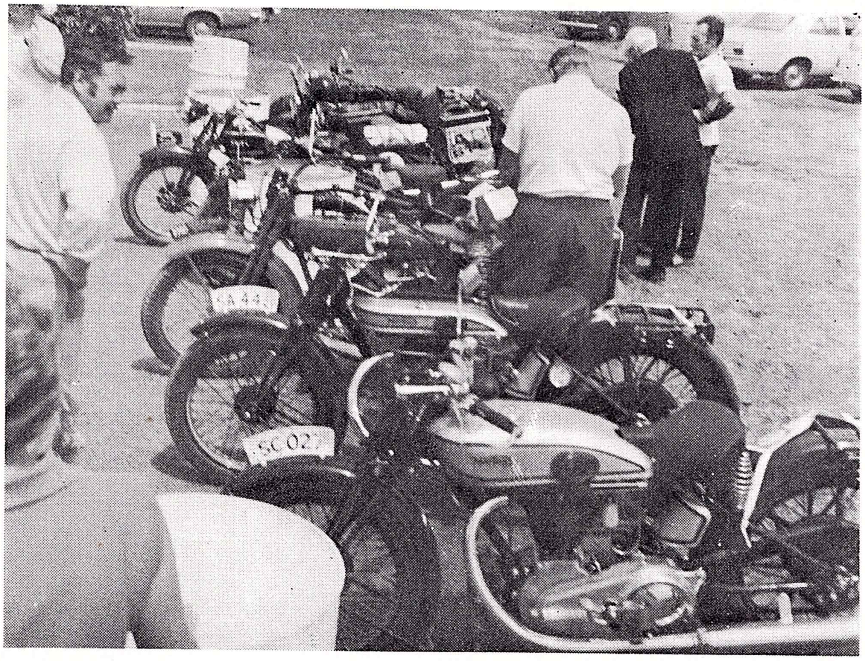
On the visitors' book at the Sullivan are many names of recent Nelson visitors.



Huntly, centre of modernisation for the New Zealand coal industry, took a step back into the past on Wednesday, February 16, when it hosted part of the 13th International Vintage and Veteran Rally for cars and motor bicycles.

On the first day of the rally a section of the cars stopped at Huntly for a lunch break and were parked for local residents to inspect.

This was the second international rally to take place in New Zealand, the first being in 1965. More than 750 entries were received this year and a computer was enlisted to help programme the event. Several routes were used by the cars, covering the country from Auckland to as far south as Invercargill and giving most New Zealanders the chance to see some of these veterans of motoring history.



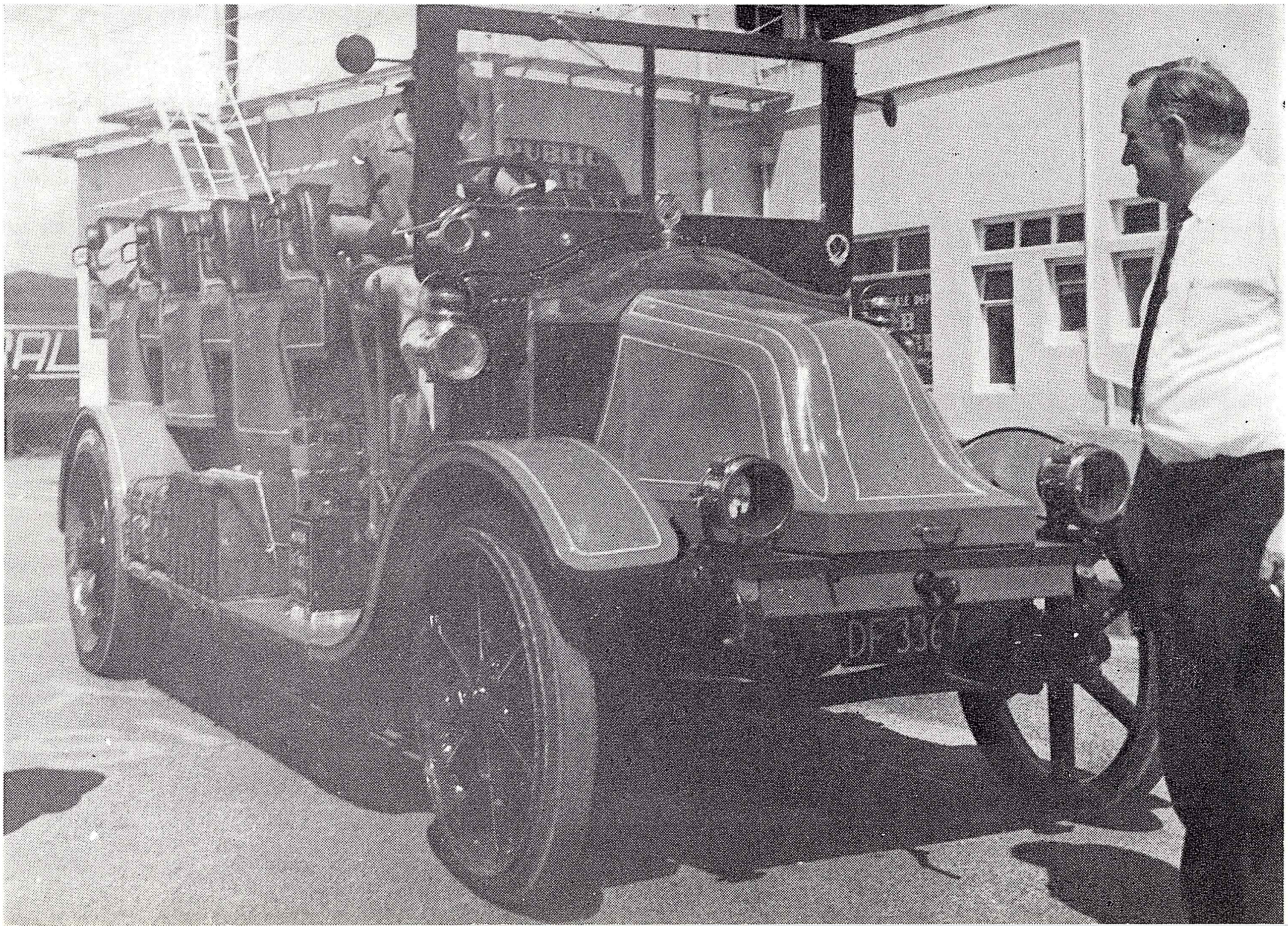
Some of the vintage and veteran motorbicycles in the rally which stopped for lunch at Huntly.

A 1914 Talbot revives memories for former mine engineer Mr J. Young. Mr Young (left) who retired four years ago after working at Glen Afton and McDonald mines owned a similar Talbot in 1930. Mr J. Luke (right), also retired after 40 years of mining took time off from inspecting the motor of the Talbot to tell "Coal" that the vintage cars were parked over a worked-out mine. The Talbot 4CB was entered in the rally by Mr J. R. Jordan of Australia.

Huntly residents enthusiastically use their opportunity to see the competitors on Route 13 of the Vintage and Veteran International Rally during the lunchtime stop at the town on the first day of the rally.

"Try firing her up on Rotowaro peas!"—Don Wilkes, Coal Research Association technologist from Hamilton watches Tommy Thomas, Distribution Manager of State Coal Mines at Huntly try the crank of a vintage Maxwell. This 1909 car was entered by Mr S. Rumble of Australia.

"Are you having trouble with smoke emission?"—Don Knox, fuel technologist with the Mines Department at Auckland looks at a 1914 Renault charabanc. This 14-seater, solid-tyred vehicle was bought for one shilling and rebuilt by the Auckland Vintage and Veteran Car Club as a Wednesday night project. The rebuilding took six years.



THE WESTPORT COALFIELD

Although not strictly in the Westport coalfield, coal was first discovered in the Charleston area at the Waitakere or Nile River in 1846 by Charles Heaphy and Thomas Brunner.

By W. A. SARA

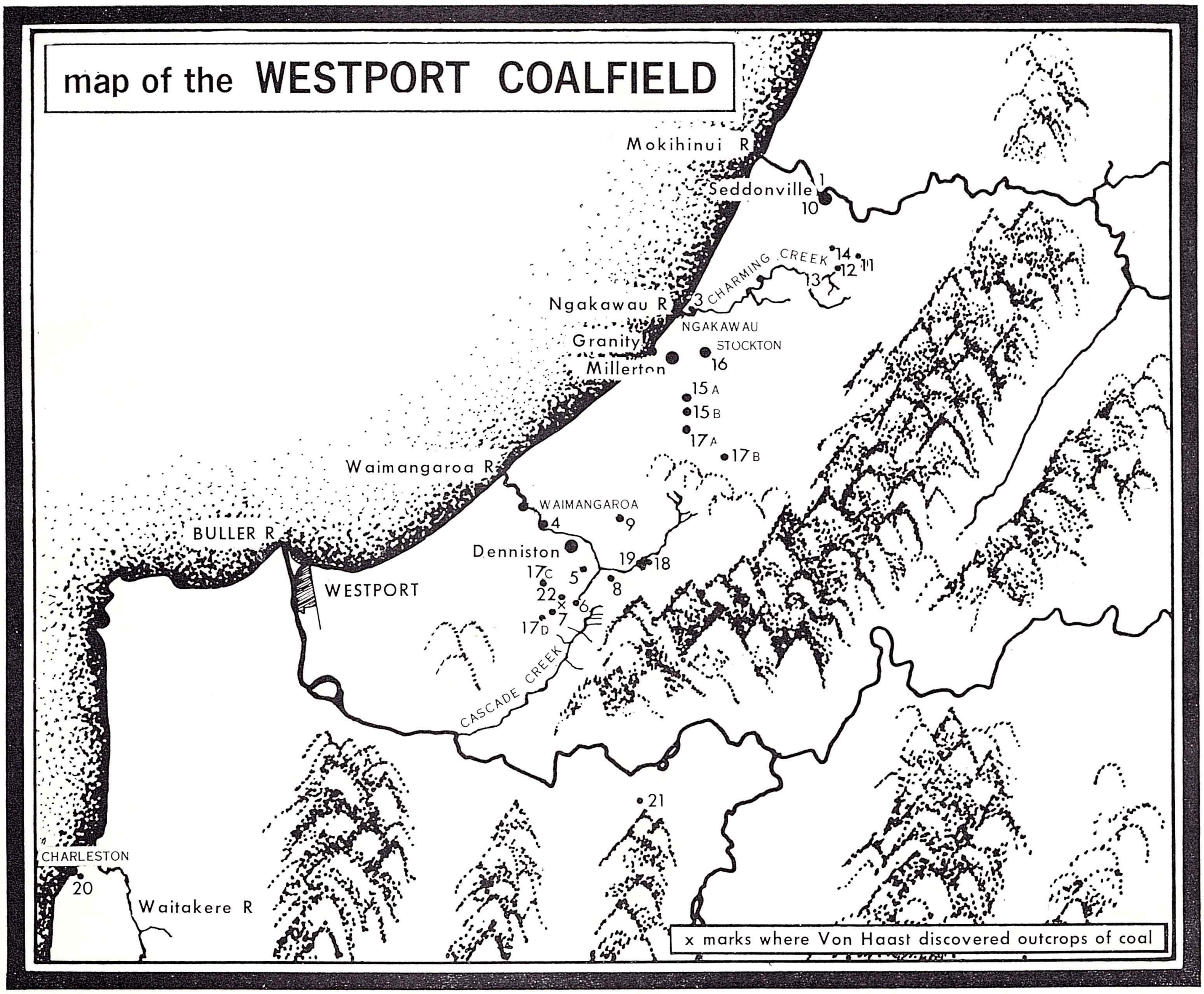
In 1859, John Rochfort found pieces of bituminous coal in the Waimangaroa River. In 1860, Julius Von Haast found a valuable seam of bituminous coal in the area between Mounts Rochford and William close to the township of Denniston. This aroused great interest and the Nelson Provincial Government sent James Burnett to survey the field. In 1862 he also examined a seven-foot coal seam at the Mokihinui River. This seam would be the outcrop opened up by Garvin and Batty on the north side of the Mokihinui River in 1864 (1).

A small amount of coal was mined and boated or punted down river to a small wharf near the mouth of the Mokihinui River. In addition to this a small amount of coal was mined at Page's (Chasm) Creek about four miles inland from the sea but land carriage to the wharf was too expensive so operations were suspended. This put an end to mining in the meantime and it did not recommence until about 1880.

About 1872, the Albion mine opened at the junction of Mine Creek and the Ngakawau River (3), but transport costs were high and the small vessels had difficulty in entering and leaving the Ngakawau River so operations were suspended. In 1874, at Waimangaroa the Wellington Mine was commenced, first known as Sims Drift (4). Later, the Wellington Coal Company was formed and first put coal on the market in 1877.

The coal was extremely friable so the company erected six coke ovens and a good class of coke was said

Bracketed numbers give mine locations on map (refer Mine Map Reference page 18).



x marks where Von Haast discovered outcrops of coal to have been made.

Denniston

In 1878, the Westport Colliery Company was formed later to be known as the Westport Coal Company to amalgamate the existing coal leases. The first mine at Denniston was known as the Fisher mine but in 1880 was changed to Banbury (5). It was located very close to the township of Denniston.

In 1881, the company extended through the Banbury mine, its haulage system to the Coalbrookdale (6) area which in later years led to the Whareatea mine (7). Within the Coalbrookdale area, no less than 10 mines have been in operation at one time or another.

At present the only mine working in this area is the Whareatea. In the early days of Denniston the endless rope haulage was not the type we know today but an endless chain which was the cause of many an accident along the rope-road, not so much of the workmen but more of residents who used the rope-road to travel along. In 1887, this was converted to a conventional rope-way.

In those days there was no road access from Waimangaroa to Denniston — only a foot track. Consequently, there was much illegal riding up the hill on the railway wagons which were hauled from sea level to Denniston some 3,000 ft. above sea level for transporting the coal down to Westport.

That system of haulage was in use until a few years ago when it was closed down in favour of motor transport.

Although riding on the haulage system was forbidden, many tried it and found themselves before the Court, and fined — all except a local publican who also rode up the hill, and who, because he did not qualify as a workman, was acquitted by the Magistrate, much to the disgust of the Inspector of Mines, who in those days lived in Dunedin

Rampant Fires

In 1894, the Westport Coal Company extended activities to the north of the Coalbrookdale area in to what became known as the Ironbridge mine (8). On this side fires were fairly rampant and much coal was lost. Besides the main Ironbridge workings there were to the north of these some two-dozen smaller mines in outliers of coal in the Deep Creek area.

The furthermost mine was about two miles north of Banbury mine. At the beginning of the 1880's the Koranui Coal Company was formed to mine coal on the north side of the Waimangaroa River in outcrops about one mile west of the northernmost workings at Deep Creek (9).

MINE MAP REFERENCE

1. Seam worked by Garvin and Batty in 1862. The piles for the wharf can be seen on the north side of the river, when the tide is low. 2. Page's (Chasm) Creek—mine not located. 3. Albion Mine. 4. Sim's Drift Mine. This developed a few years later into the Wellington Mine. 5. Fisher Mine (later Banbury). Fisher was the name of one of the original shareholders. 6. Coalbrookdale area. 7. Whareatea Mine (closed Christmas, 1971). 8. Ironbridge Mine. 9. Deep Creek. 10. Mokihinui Mine (opened 1880). 11. Coal Creek. 12. Coronation. 13. Charming Creek Mine. (See "Coal", Autumn, 1970, pages 16 and 17). 14. The Westport-Cardiff Coal Company operating near Seddonville. 15. Millerton-Mine Creek-Mangatini mines. Highest production year was 1914, when 352,071 tons of coal were produced. 16. Westport-Stockton Coal Company workings some miles south-east of Millerton. 17. Stockton mining. As well as Whareatea, Webb Mine closed Christmas 1971. 18. Birchall's Mine. 19. Davis and Party Mine. 20. McLaughlin's opencast mine, Charleston. 21. Heaphy's opencast mine, Buller River.

In all, seven small mines were opened up, but operations only lasted until 1886 when they closed down. In that time the ownership of the lease changed several times, two of the owners being the Union Steamship Company and Westport Coal Company.

In recent times, some interest has been shown in the area but as yet no work has been commenced.

Seddonville Area

The Mokihinui mine was opened up near St Helen's (10) but after 500 tons of coal were sent away the conditions were found to be unfavourable and operations ceased. In 1885, the Mokihinui Coal Company reopened the mine and constructed a mile and a half of railway from the mine to the wharf further down river.

Not a great deal of coal production took place, the company's main interest being in prospecting and extending the railway line inland to Coal or Parenga Creeks.

In 1891, the company had the misfortune to have their newly-acquired steamer, the Lawrence, wrecked on the Mokihinui River bar .However, in 1892, prospects looked brighter with the completion of the railway to Westport.

With the extension of the railway line to Coal Creek (11), work was concentrated on the seam known as big face and on the hut seam. Fires occurred in 1894 and the areas were sealed off but in 1895, the mine was leased to a party on a co-operative basis — the Knights of Labour, which worked it for some time.

Towards the end of 1896, the Mokihinui company was wound up and the property came into possession of the Crown. Attempts have been made to work the seam in fairly recent times but without much success.

To the east much mining was carried out, both opencasting and underground by various operators, one of the more recent parties being the Coal Creek mining party which produced for many years. The last operator was Mr R. Hollingworth who ceased operations about eighteen months ago.

In the Seddonville-Charming Creek area a number of small mines have been in operation during the past 30 years. Roger Brothers with their various mines under the trade name of Coronation (12) have played a big part in the mining world. The Charming Creek mine, one of the bigger units in this area is still producing but with an output greatly reduced from those in former years (13).

Still Burning

In 1893, the Westport-Cardiff Coal Company began operations near the township of Seddonville (14). Its operations continued until about 1900 when fire was discovered in the main section of the mine which was then sealed and flooded. These measures were not entirely successful as parts of the mine are still burning today.

Over the years, parts of the area have been the scenes of a number of small co-operative efforts. One well-known individual who played a prominent part in this was Mr J. Dove.

In 1905, the property reverted to the State. Actually, the State began its venture in to mining in 1901. A new section of the Westport-Cardiff leases known as the cave area was opened up and known as the Seddonville Colliery.

The venture was not very successful mainly because of the soft or friable nature of the coal. The mine was persevered with until 1914, when it closed down after all hard coal in sight had been exhausted. At the beginning of World War I, Hydro Coal Mines Ltd., re-opened the mine and successfully worked it until 1956.

At present the only mine in production in the Seddonville area is Charming Creek.

Millerton and Stockton

In 1891, work began on the construction of the inclined tramway for the opening up of the Millerton-Mine Creek-Mangatini (15) coal mines. Five years later coal was being produced and the mine soon became one of the largest producers in the Dominion.

Unfortunately, as was the case with other mines in the Buller district the Millerton mines were troubled by spontaneous combustion.

The smoke can be seen from sea-level today. The mine has now been closed but during its lifetime its production amounted to over 10 million tons of coal. In the latter stages of its life the inclined tramway was dispensed with in favour of motor transport.

The Westport-Stockton Coal Company was formed to exploit extensive coal deposits some miles south-east of Millerton and commenced to produce coal in October, 1908 (16).

The coal was hauled from the mines to the edge of the escarpment by electric locomotive and then down the hill to Ngakawau by inclined tramway. Today, this has all been dispensed with in favour of motor truck and aerial ropeway. Over the years there have been a large number of mines producing coal from the many isolated blocks of coal in the area.

Opencast mining has been a feature of the Stockton (17) mining complex, over one million tons of coal having been produced by this method. At present only two mines are producing at Stockton, the Webb and the new Mt. William mines. The whole of the Stockton mining area was taken over by the State Coal mines in 1944, and in 1947 both Millerton and Denniston were also taken over.

At present, the State is working three mines at Denniston, the Whareatea (nearing exhaustion), Sullivan and Escarpment. In addition to this there are two private mines also working at Denniston, Birchall's and Davis and Party (18 and 19), both outputs being marketed with the State coal.

At Stockton there are two underground mines, the Webb and Mt. William (17) and, in addition to this, some opencast coal is produced from time to time.

The only other mine working in the Buller coal-field is Charming Creek.

Charleston

As previously stated, coal was first discovered in Charleston in 1846 by Charles Heaphy and Thomas Brunner, but the first record of any production was recorded as opencast workings in 1880. But, it is fairly certain that coal was mined very much earlier than this for fuel for the gold miners.

There have been 27 mines, mostly opencast pits at work during the past 100 years for a total production of about 500,000 tons of coal. At present only one pit is at work — McLaughlin's — which supplies coal mainly to the Christchurch market (20). Present indications are that there is approximately 10-million tons of coal still available.

Buller Gorge

In the Buller Gorge, there is what is termed the Inangahua coal-field where, so far, 16 mines have been in production, but at present only two are now working. Heaphy's opencast on the south side of the Buller River (21) and Hassan's at Coal Flat on the north side.

In the early days much of the coal was supplied to the gold dredges working on the Buller River. The first coal produced was by Mr C. Croawell.

Some 350,000 tons of coal has been produced by opencast methods, while some seven million tons of coal is estimated to be remaining in the area.

Future

What of the future?

Charleston and Buller Gorge mines only play a very small part in the economy of the district. The emphasis must be on the main Buller coalfield.

Some 44½ million tons of coal have so far been produced from 132 mines leaving some 46 million tons of recoverable coal still in the ground, the majority of this being in the measured category. Of this, some 20 million tons can be regarded as opencast — all in the Stockton area.

With the report on the development of the West Coast now made public and the way now open for the exporting of coal through the port of Lyttelton we can perhaps look forward to some activity in the not-too-distant future regarding the vast quantities of coal at Stockton. It is known that for many years overseas interest in this coal has been evident and the release of this report may speed up the process of its disposal.

The decision of the powers that be to ship all West Coast exports through Lyttelton has not met with favour in some sections of the Coast notably in the Buller district, but it has the effect of retaining the Buller Gorge railway for all time, a feature vital to the district.

This is the second article on West Coast coal-fields by Mr W. A. Sara, who is compiling data about past mining and future prospects for all coalfields in New Zealand. Mr Sara is Senior Technical Officer for the Greymouth office of the Department of Scientific and Industrial Research.

TWO VISITORS WORE SLACKS

(Cont. from page 15)

A typical excursion was when a Richmond couple with their son and daughter called at the State Coal Mine office in Westport. The convenience of a visit just then had to be checked but, an hour later, the family were in their car heading up into cloud on the Denniston road.

At the mine head they went over a plan of the workings and inspected some of the gear peculiar to this trade. Soon, the four were kitted out with hard hats and miners' lamps.

The most practical clothing for holiday-makers is that about due for laundering, with reasonably-stout footwear (not sandals) and a windbreaker to catch the odd drips from the roof.

One mine, Escarpment, is quite 'flat going" with only a short distance to the working face, but this one was almost a half-mile walk, beside the conveyor belt, with a steep slope in at the start.

As the light fades, then goes, a few visitors show nervousness. The odd person has stood rooted to the spot . . . and not just children.

Much of the walk is along well-worn paths through tunnels where you can stand erect, with the occasional stooping passage under timberwork or low roof sections.

At the end of the main access tunnel there is a maze where the coal seam is criss-crossed at 1-chain centres with "drives" a few feet wide. The technique here is to establish this gridwork of tunnels through the coal seam then, at a later stage, extract the mass of coal left in these chain-square blocks while working backwards towards the main tunnel.

More Dangerous

There's several times as much coal to be easily won during extracting, compared with initial tunnel driving. Because the roof support is being taken out, it is also potentially more dangerous work. "Extracting is a job where a miner has to read the signs and know his stuff!" your guide will tell you.

It's a cheery feeling a half-mile under, to see a wee light come bobbing towards you out of inky blackness and finally see the flash of white teeth as the first coal-winner you meet grins and greets you, then pushes past about his business.

Gelignite and a shovel are their two main tools in getting coal out of the seam and on the conveyor. That shovel, incidentally, is the old "banjo" which holds two or three times what today's commercial pattern will.

There were nine men on the shift the day our Richmond family went down the Sullivan — six hewing out and three on back-up work. "Guide Rangi" was tenth man but they chipped him that he wasn't getting much done.

Back at the surface the visitors emerged in a flurry of rain and shivered. It was mid-summer, but 3,000 feet up. In the little office where they surrendered their gear there was a roaring fire. Coal!

7/8 PEAS

"I thought coal was coal until I took this job," Miss M. J. Masters, matron of the Matariki Geriatric Hospital at Te Awamutu, told us. As well as taking charge of this new hospital with 22 beds last July, Miss Masters became responsible for the heating system powered by coal.

"Seven-eighths peas", she said, in describing how her knowledge of New Zealand's indigenous fuel has been extended.

On the site of a former private hospital, the new one which is controlled by the Waikato Hospital Board, has inherited attractively laid-out grounds with mature trees to set off the smart architecture of the building. Flower gardens and lawns add to the pleasant surroundings. The boilerman, Mr Roy Hopping, is responsible for the outside work.

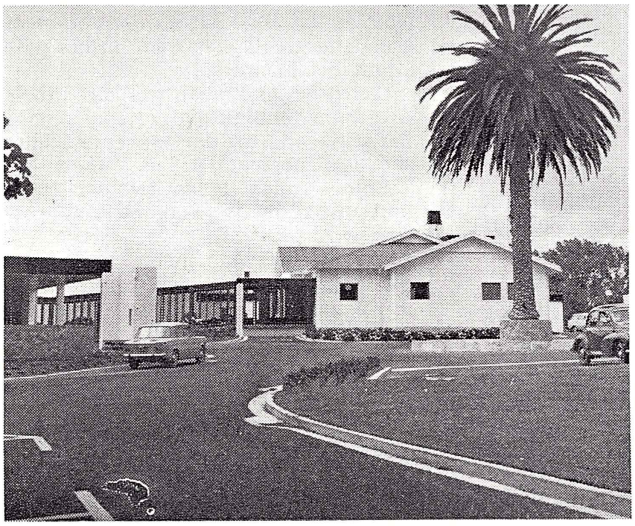
The boiler house is built on the side of a bank, with the coal bunkers above at the ground level of the hospital building. With the coal feeding the boiler hoppers by gravity and automatic control supervising the heat production, Mr Hopping needs only occasional inspections or a few minutes for emptying ash to carry out his boilerman's duties and he has the rest of his time for gardening. A farmer for 30 years, he finds the hospital and the boilers less demanding than a herd of dairy cows requiring twice-daily milking.

Good warm atmosphere

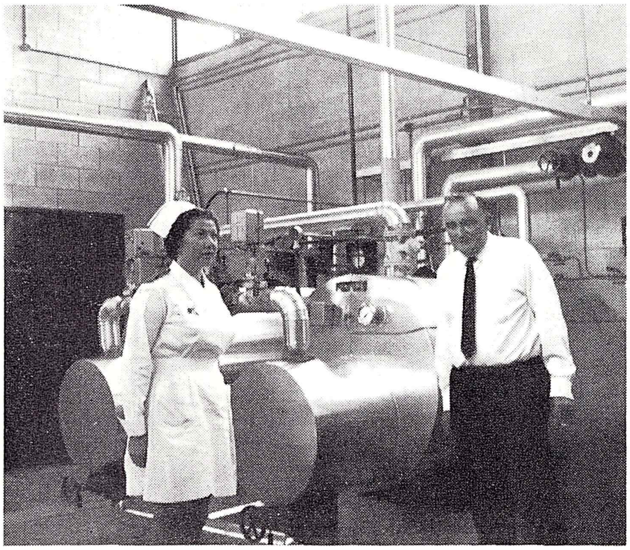
"Old people need a good warm atmosphere — they don't move around so much and therefore feel the cold," Miss Masters told "Coal" when showing us the two "Heatpak" C. W. Hamilton-type 2404 boilers with Ryland bunker-to-boiler stokers.

The hospital filled a need in the modern community where, with the trend towards small houses and

Mr R. Hopping, boilerman at the Matariki Geriatric Hospital pauses while mowing lawns to discuss hospital heating with Miss M. J. Masters, the matron.



The Matariki Geriatric Hospital at Te Awamutu.



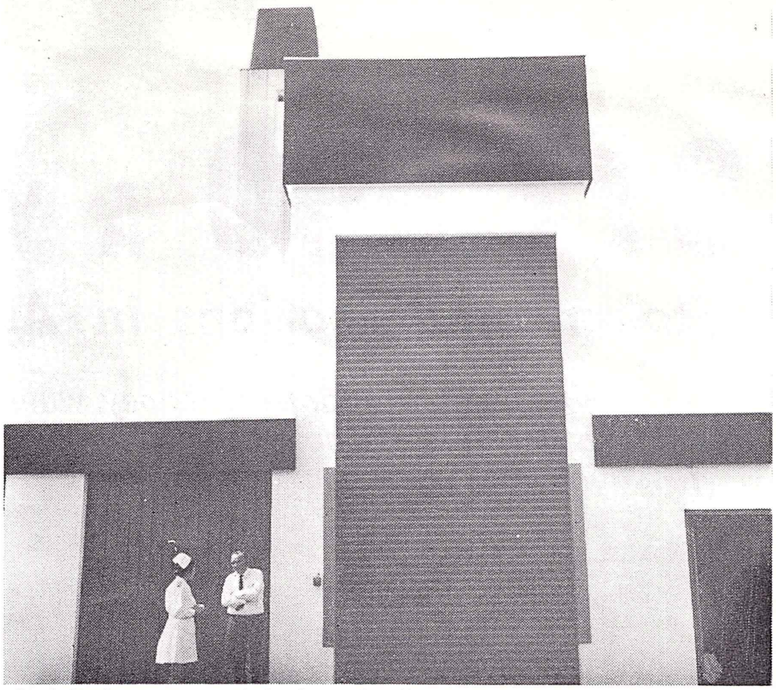
"Old people need a good warm atmosphere": Miss M. J. Masters, Matron of the Matariki Geriatric Hospital shows the two "Heatpak" C.W. Hamilton type 2404 boilers.

working wives, many people were no longer able to care for the elderly in a family group, she said. The geriatric hospital provided for those who needed full nursing care.

"People these days are living longer," Miss Masters continued. "Tuberculosis and other diseases which carried people off earlier are now better controlled, so that there is greater need for such institutions today."

Relatives can visit patients regularly and a birthday is made an event, as in the case of the hospital's oldest patient, in her nineties, who had a cake baked especially for her by the hospital's catering staff.

Te Awamutu is known as the "rose town" for the elaborate rose garden which helps to beautify the town. The attractive appearance of the Matariki Geriatric Hospital helps to make this important amenity into an equally beautifying contribution to the town.



Coal bunkers at ground level at the Matariki Geriatric Hospital. The boiler house is alongside, underneath, for ease of coal handling.

OBITUARY:

Mr. HORI PAKI

A former coal miner who lived to 106 years, Mr Hori Paki, of Huntly West, died on April 13.

Affectionately called "the old man", Mr Paki was known for his intelligent interest in world affairs. He was always at important functions on the Turangawaewae Marae at Ngaruawahia, smartly dressed with a bow tie, a rug over his knees and a woollen cap on his head.

His closest interest was in the King Movement families. His grandson, Mr Whatu Paki, is the husband of the Maori Queen, Dame Te Atairangikaahu.

With nine sons and daughters and many grandchildren he was always surrounded by warm family associations.

Mr Paki always showed a continued and informed interest in youth and issued a message every year from the time of his 100th birthday in 1965.

In a message on his 106th birthday last July, he said: "Pursue education with vigour as this is the vehicle upon which our Maori people were moved forward. God is our shelter. He will guide us at all times."

This reflected his desire to think of the future, as one of his relatives said: "He does not like to think in the past, he is thinking from now onwards."

Only once, two years ago, did he say that he thought he was getting too old for messages and would give it a miss.

But just before his birthday he changed his mind and asked the press to call.

His message then was to Maori youth, urging them to continue to seek knowledge and uphold the Maori race.

Mr Paki always wrote out his messages — without needing spectacles.

Right up to his death he liked to roll his own cigarettes and until two or three years ago he enjoyed cutting his own firewood.

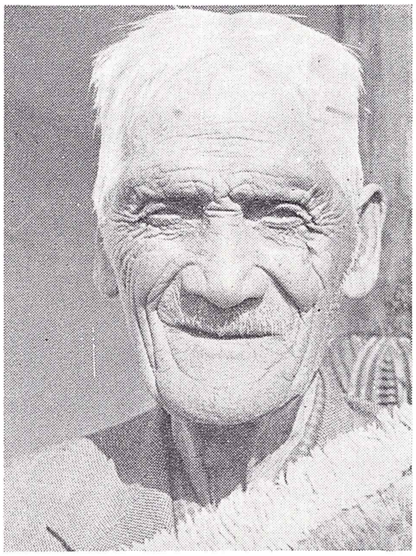
Mr Paki had a hard working life as a miner and farmer. He always held that hard work hurt no one.

Mr Paki was always brought into discussions and his advice was well heeded. He was an active member of the Anglican Church, he always insisted that the first event of his birthday in July be the celebration of Holy Communion.

Mr Paki became unwell two weeks before his death. He seemed to recover but fell ill again and died.

More than 1,000 mourners crowded Huntly's Waahi Pa to pay last respects to Mr Hori Paki.

The Maori leader's body was escorted to the marae by Canon W. Huata, of Hamilton, and a party of boys from St. Stephen's College carried the coffin. The coffin was covered with priceless feather cloaks.



MR HORI PAKI

Messages and telegrams of sympathy poured into Huntly following the announcement of Mr Paki's death.

Mourners arrived from many parts of the country, and several thousand attended the funeral.

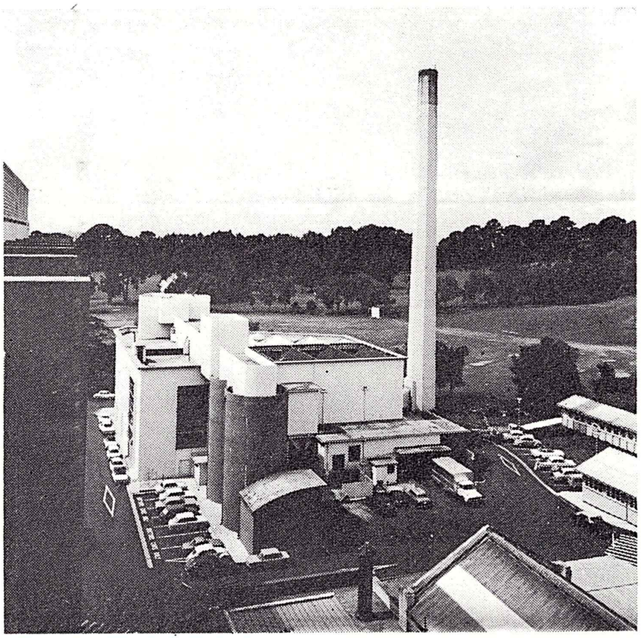
The Bishop of Waikato, the Rt. Rev. Dr. A. H. Johnston, expressed his "sincere sympathy with the people of Mr Paki's family and tribe.

"He was a great example to us all . . . a man of faith and leadership," he said.

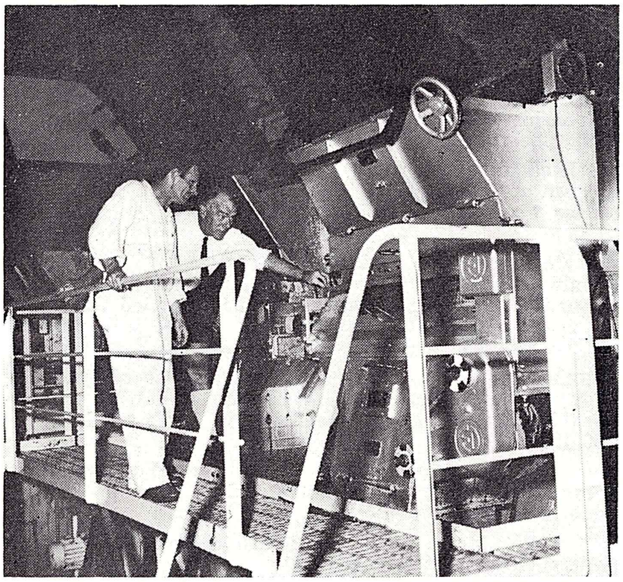
$17,500 A YEAR SAVED

Stoker modifications in Auckland hospitals

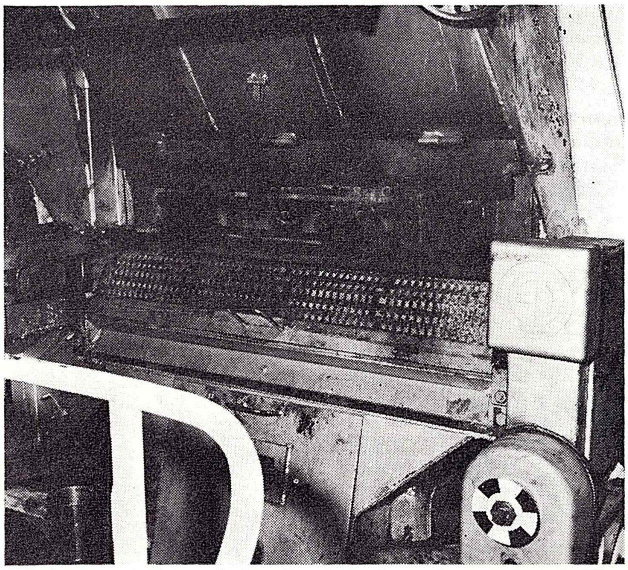
How to get most heat for least money, when that money is provided by the taxpayer? Hospital board engineers throughout the country face this question every year when tenders for coal supplies come under review.



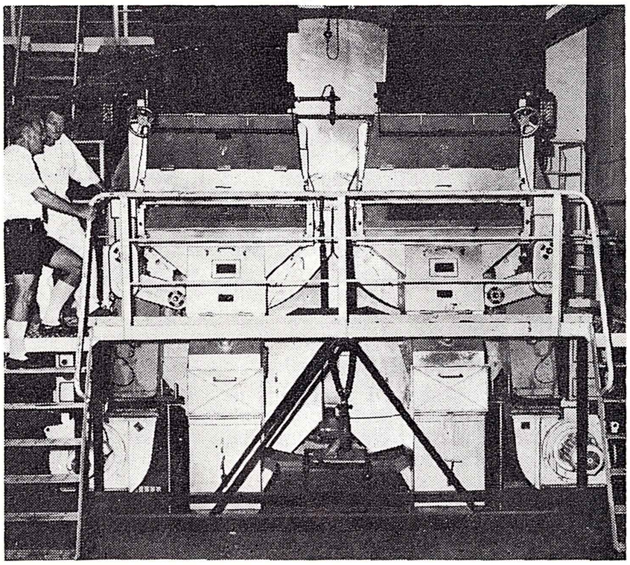
Green Lane Hospital boilerhouse showing the coal receiving hopper and the twin silos. Almost 10,000 tons of Kopuku coal was used in 1971.



One modified chain grate stoker at Green Lane Hospital. Mr W. Milne examines the pre-ignition air manifold made and fitted to the design of the N.Z. Coal Research Association, by Mr A. J. Hutcheson.



The first pre-ignition device fitted at Green Lane Hospital. There was no separate forced air supply and air was drawn through the eight short pipes spaced along the front plate by the induced draught fan.

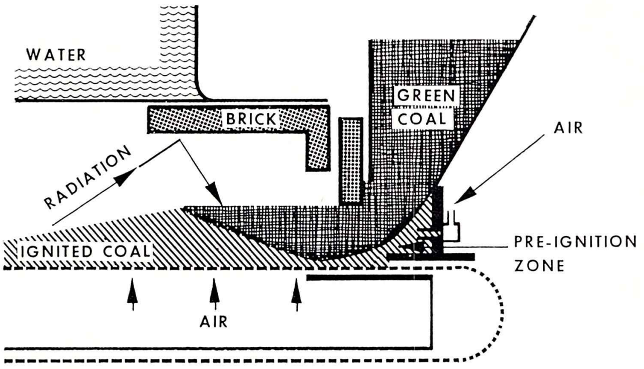


One of the two Edwin Danks 20,000 lbs per hour boilers at Green Lane Hospital. Mr A. J. Hutcheson, boilerhouse maintenance fitter and Mr W. Milne, senior fuel technologist of the N.Z. Coal Research Association, discuss the performance of the pre-ignition devices fitted to the Edwin Danks chain grate stokers. The small fan supplying air to the devices is shown at bottom centre.

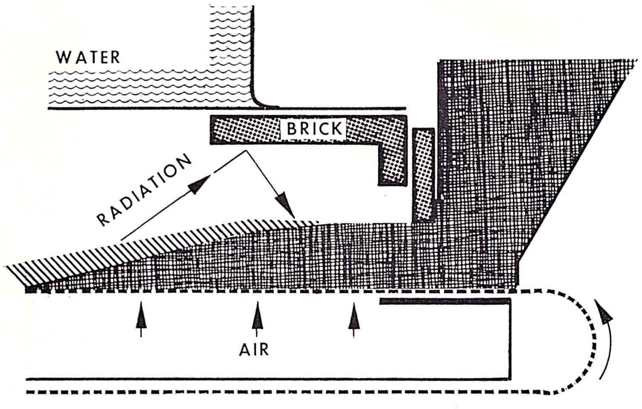
(Continued on page 23)

$17,500 A YEAR SAVED

(continued from page 22)



MODIFIED CHAIN STOKER
WITH PRE- IGNITION SECTION



STANDARD CHAIN GRATE STOKER
IGNITION BY RADIATION ONLY

In Auckland there is a decided price advantage in using Kopuku coal. The mine is only 40 miles from the city, so that coal can be transported direct by truck and double-handling through railage avoided.

Although Kopuku coal can be ignited and burned at high rates on spreader stokers where the fresh fuel is added to the top of a vigorously burning bed, it is difficult to ignite at high rates on chain grate stokers and the burning rate is restricted as a result.

The ignition of coal on a chain grate stoker is normally achieved by heating the top surface of the incoming coal by radiation from a firebrick arch over the front end of the grate.

To obtain high ignition and burning rates with Kopuku coal a relatively simple modification designed by fuel engineers of the N.Z. Coal Research Association has enabled the Auckland Hospital Board to make a substantial saving in fuel costs for the benefit of the taxpayer.

The modification, which has been made to the chain grate stokers at Auckland and Green Lane Hospitals by the Board's engineering staff, provides positive ignition of the bottom layer of the incoming coal. Burning rates approaching those of the higher rank Waikato coals have been achieved.

The modification, which admits air earlier to the coal on the chain grate, is shown in the accompanying drawings.

About 20,000 tons of coal are burnt each year in the 20,000 lbs.-per-hour boilers at the two hospitals. As a result of changing to the cheaper Kopuku coal, the engineers of the Auckland Hospital Board estimate they have been able to save about $17,500 a year.

Bacteria stop pit fires

A permanent self-repairing blanket created by bacteria to seal off disused coal faces, protecting them against spontaneous fires, has been developed by three Georgian mining engineers in Russia.

For some years, methane-consuming bacteria have been used to keep down the gas concentration in mines, but this did not prevent reaction between oxygen and the coal itself leading to spontaneous outbreaks of fire.

An alternative method of spraying the coal surface with latex was effective, but movement of the coal could rupture the protective film.

A suggestion has been made by Russian engineers that it might be possible to create a film of living bacteria which would grow over any crack or hole which might occur.

They investigated various ways of cultivating bacteria able to thrive in underground conditions.

The result surpassed all expectations: Certain bacteria began adjusting themselves to mine conditions within a few days.

It proved sufficient to spray the coal well with a solution containing bacteria, and a short time later there appeared a compact film several millimetres thick, robust enough not to be pierced by a finger.

Bacteria penetrate into all the cracks, and the film seems to grow into the very coal pile.

No oxygen gets at the coal, and since there is no oxygen, there can be no self-ignition.

This applies not only to coal but to other self-igniting minerals. — Novosti.

WARNING CANARIES

Although sophisticated equipment is available today to detect gas, miners still fondly remember the canaries they took to the coal face until just a few years ago.

If the canary fluffed up and looked uncomfortable, it was time to go. If it fell off the perch . . . vamoose. But they always grabbed the cage on their way. They had a soft spot in their hearts for the birds which saved their lives!

In really dangerous locations a man might be detailed just to watch the birdie.

One Westport miner well remembers the canary which learned fast, and was the cause of complaint that it wasn't doing its job properly. It had been gassed and fallen off its perch once too often and thereafter took precautions. As soon as the last daylight was fading on the way into the tunnel it would hop down to the cage floor and settle itself to sit the shift out in a corner.

—From the "Nelson Evening Mail".

TAURANGA HOSPITAL

"We're very happy with our John Thompson boiler and the supply of Smith's peas," Mr W. Hodder, engineer to the Tauranga Hospital, told "Coal". We were being shown the new boiler at the hospital and the coal handling system which can direct coal flow flexibly.

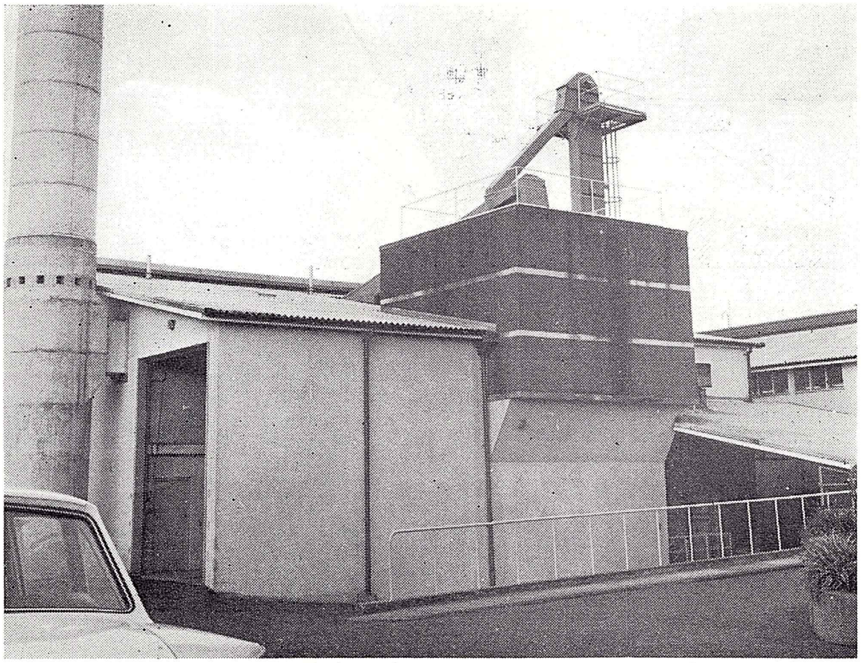
The John Thompson three-pass wet-back boiler was made in Hamilton and installed three years ago. It can provide 12,750 lbs. of steam an hour to heat the hospital which has 380 beds. The steam is used for sterilisers and the laundry and high pressure hot water at 350 deg. F. (177 deg. C.) circulates for heating the wards and the nurses' home. The temperature of the water on return is about 275 deg. F. (135 deg. C.).

The advantage of the hot water system is its relative freedom from maintenance with the circulating water kept free from impurities which could cause corrosion.

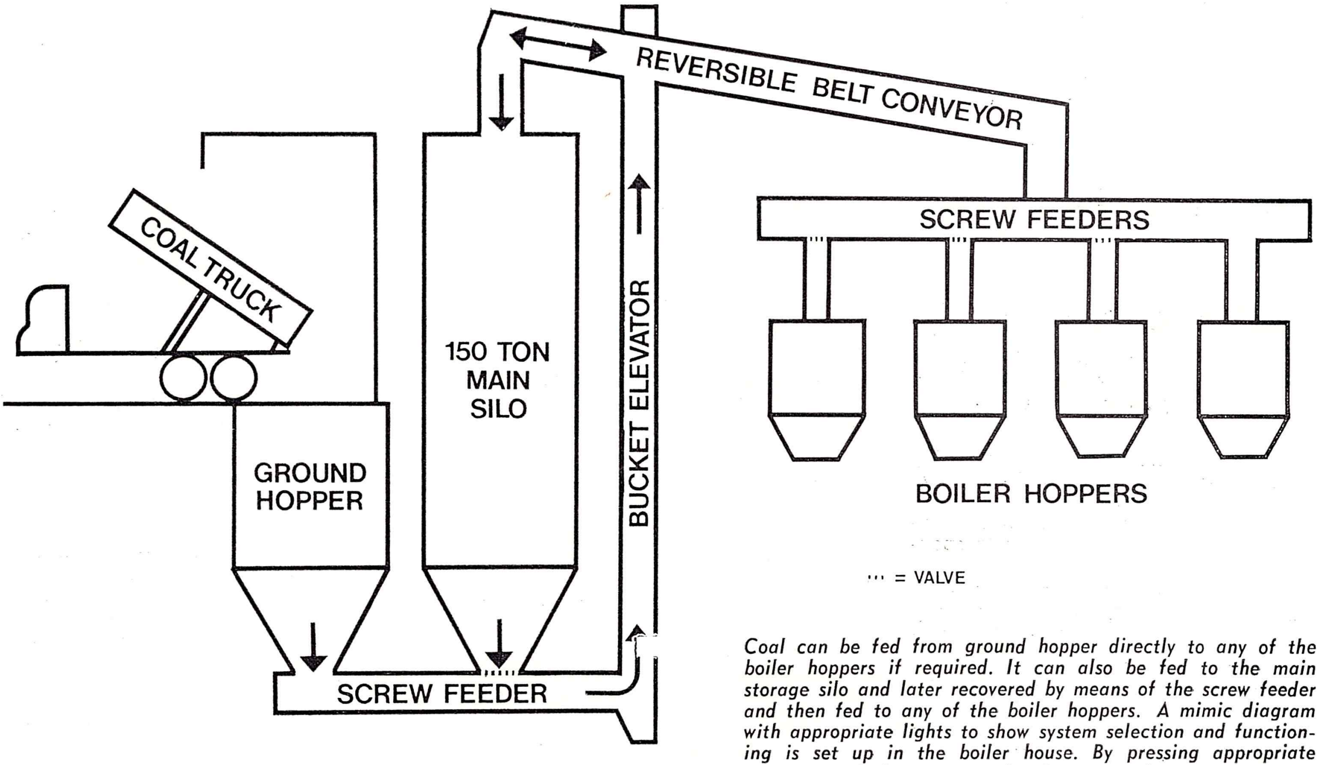
The coal is delivered into a bunker below ground level and raised to a 150-ton silo by bucket-and-chain elevator. From the silo it is distributed to boiler hoppers as required, with a monitoring system at the control panel to supervise the flow. The four boiler hoppers each hold 7½ tons. If the coal in the silo overheats the system allows it to be circulated until the hot area is isolated.

The stoker on the new boiler is a John Thompson-Triumph chain grate.

Tauranga, now one of New Zealand's major holiday centres and a rapidly-expanding port was a "sleepy hollow" when he went there 25 years ago, Mr Hodder said. Not only the town has attractions, however. "We always have firemen waiting to come here," he said. "The job's so clean!"



The bucket-and-chain elevator at the Tauranga Hospital.



Coal can be fed from ground hopper directly to any of the boiler hoppers if required. It can also be fed to the main storage silo and later recovered by means of the screw feeder and then fed to any of the boiler hoppers. A mimic diagram with appropriate lights to show system selection and functioning is set up in the boiler house. By pressing appropriate switches an operational sequence is set up.

More and more coal is being packed, stacked and sold in strong, clean "Multiwall" paper bags.

"Multiwall" paper bags have revolutionised the marketing of coal.
Now it's a simple, clean, no fuss, no bother operation.
From everyone's point of view.
The housewife can buy it as and when she wants it. And take it home with her in the car. On the seats or in the boot.
She doesn't have to wait for deliveries. And you don't have to deliver.
"Multiwall" bags of coal are easy to stack and store. And you can wear your best clothes while you're about it. You can have your own brand printed too.
Get packing, write to the Sales Manager, "Multiwall" Paper Bag Division, at the address below, for further details.

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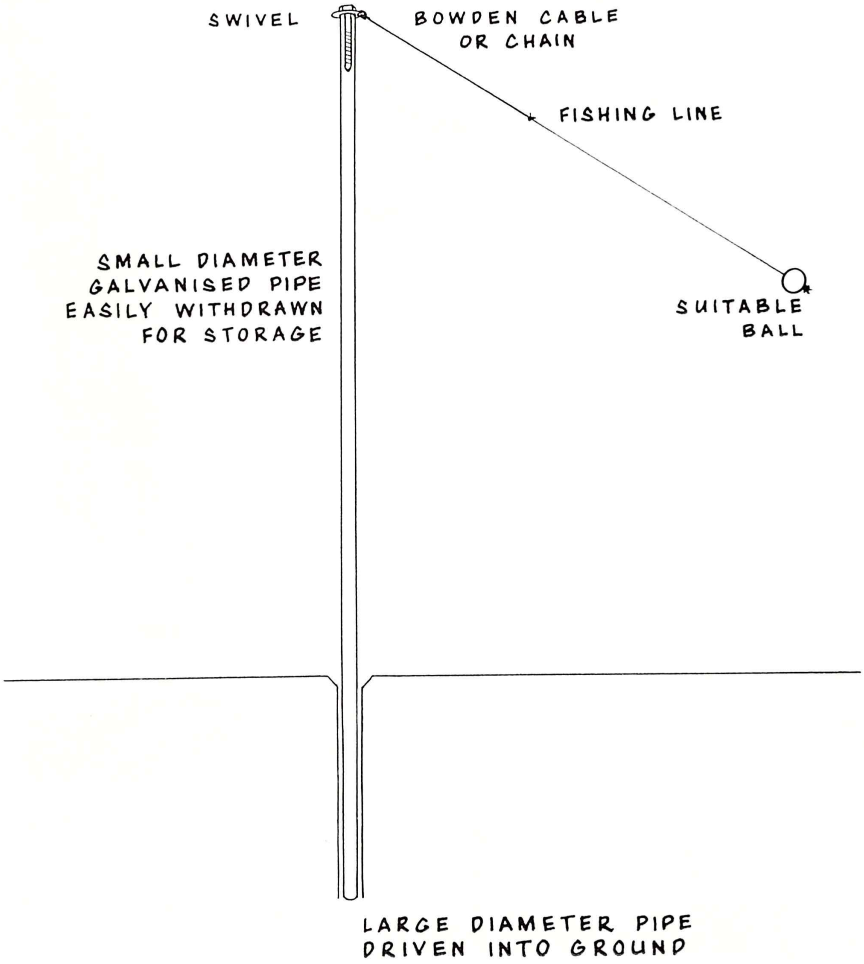

SWIVEL
BOWDEN CABLE OR CHAIN
FISHING LINE
SMALL DIAMETER GALVANISED PIPE EASILY WITHDRAWN FOR STORAGE
SUITABLE BALL
LARGE DIAMETER PIPE DRIVEN INTO GROUND

How can parents let youthful energy be burnt up around the home without having windows broken or other damage caused? In one Wellington home, the solution came through the coal industry.

The visit to the home of mining deputy "Algie" Rhodes at Puketihi, described on page 20 of the September issue of "Coal" gave the idea for keeping one Wellington family out of mischief.

Copying a game in Algie's garden, this family built its own and construction was easy and inexpensive.

A ball permanently on the end of a string, attached to a post in the ground provides great fun for a teenage family and some fun for Mum and Dad too, at times.

An eight-foot length of galvanised pipe was bought cheaply from a local plumber. Another piece of pipe, about two-feet in length, was already on hand — the inside diameter being large enough for the longer piece to slide inside.

The short, wider-diameter pipe was driven in to the ground, in the centre of the lawn selected for the game. The longer pipe was slipped in from time to time as the small one was being driven to check that it was going in straight.

Algie Rhodes' version of this game used a short piece of chain swivelling at the top of the thin pipe to attach the string to. This chain is the type used for plugs in wash handbasins. The Wellington version used a short piece of bowden cable — a souvenir from motorcycling days which was resurrected from the shed. This was looped through a small hole drilled in the flat of a large washer, and soldered for permanence. A large whitworth galvanised bolt, fitted in to the top of the pipe, the threads being small enough to fit inside while the shoulder of metal at the top of the thread (beneath the head) stood proud of the pipe and leaving the washer free to move. Although this bolt sits in the top of the pipe and was not forced in, it has stayed in position despite the violence of the game at times.

A suitable length of fishing line attached to the end of the bowden cable (or chain) is threaded through a rubber or plastic ball, with the help of a saddler's needle. Two bats, a little larger than ping-pong bats, were cut out roughly to shape from five-ply with the sawbench and smoothed off with the sander, and play began.

With two people playing, the idea is to try to make the ball wind around the pipe in the direction of a hit — the opponent tries to make it wind round the other way.

Be careful that any knot in the end of the string, or whatever method is used to keep the ball on the string, is not so large and massive as to cause an injury if it hits a player in the face. With the full force of a teenager's swings the ball whistles round viciously at times.

And, in choosing ground for siting the game, make sure it is a piece of lawn you can afford to sacrifice. The grass which was gradually winning its struggle to stay alive in the Wellington hillside clay did not last long when pounded enthusiastically by players' feet.

The long pipe can easily be pulled out and put aside to allow lawn-mowing. To save damage to your mower, sink the ground pipe far enough in so that its top is slightly below lawn level. Use a temporary stopper or plug to stop the pipe filling up when the main one is out.

As a means of amusing a teenage family over holidays or week-ends, the game copied from Algie Rhodes has been an outstanding success. Thank you, coal industry, for providing the idea!

* * *

TEST BORES FOR PLANT

Test boring to find stable foundations for a proposed coal-fired electricity generating station is proceeding at various sites in Huntly West.

It will be the middle of the year before a final decision is reached as to the feasibility of the scheme and the site of the plant.

"Waikato Times".

* * *

BRIGHT FUTURE FOR COAL

(Reprinted from the "Soviet News", this article describes the Coal industry in the U.S.S.R.)

Far from being a declining industry, Soviet coal mines are set for further expansion. Output was up 17 million tons last year — and is to reach 685 million tons by 1975. In this issue of "Soviet News" we take a look at the industry from several points of view — prospects, employment, safety.

Last year the U.S.S.R. produced 641 million tons of coal — an increase of 17 million on the year before. And by 1975, output is to reach 685 million tons.

What is the future for coal in the U.S.S.R.? Will its output decline as oil, gas and atomic energy grow? This article is based on a survey by Boris Bratchenko, Minister of the Coal Industry.

The industry will continue to expand indefinitely, because coal remains our basic industrial and power fuel.

Over a third of our output goes to the power stations and another quarter is in the form of coking coal for the steel industry.

Coal is also chemically processed to produce a wide range of products: resins, plastics, fertilisers, dyes, drugs, and liquid fuel—more than 200 major items in all.

In recent years the government has mapped out a number of measures for the further development of the Kuznetsk, Karaganda, Pechora and Moscow basins and the coal-producing areas of the Soviet Far East and Chita region.

Not long ago measures were also announced for further developing the coal industry of the Donbas.

This includes the reconstruction of many existing pits and the opening up of new mines. There is to be a radical rise in productivity, thanks to comprehensive automation of the cutting and dressing processes in this veteran coal basin.

Opencast mining is certainly growing, but deep mines still play by far the leading role in our industry. In 1971 they accounted for nearly threequarters of total output. Almost all the most valuable grades and the anthracites come from deep mines.

Nearly a fifth of our coal is extracted from narrow seams, while 15 per cent comes from steeply inclined seams where effective mechanisation has so far proved impossible.

But wherever possible, mechanisation is going rapidly ahead. Take the last five years: in that period twenty new collieries, each with an average output exceeding a million tons a year, went into operation.

These easily absorbed all the manpower made available by the closing of 103 exhausted pits and the reconstruction and amalgamation of 163 old small collieries.

Just on a third of our coal is still won by small mines producing less than a thousand tons of coal daily.

But the share of big collieries is steadily growing. In the last five years the coal output of mines extracting 3000 tons or more a day increased from 13 to 24 per cent.

Cutting, loading and transport of coal, timbering and control over the hanging wall has now been integrated into a single process in the latest pits, thanks to the narrow-cut coal combines, planers and conveyors.

Output from longwalls equipped with them has grown almost four times over in the five years. A third of all our coal is now mined by mechanised sets. These are the most promising means for sharply increasing the number of heading drifts.

There are now more than 220 miners' teams winning over a thousand tons a day. Some of them top 2000 or 3000.

Hydraulic mechanised timbering has opened good possibilities of getting coal without the permanent presence of miners in the heading. Prototypes have already been tested in the Donbas and in the Moscow basin.

By 1975, some 25 longwalls are to be equipped with automatic sets.

During the years to 1975 we are completing the changeover to narrow-cut extraction, and mechanised sets will extract up to 60 per cent of the coal in wide seams. Narrow seams, unfortunately, will only achieve 13 per cent.

In the coming five years we intend to build such machines for drifting small-section headings. Our underground transport facilities at present handle some 1½ million tons of coal and 300,000 tons of rock a day. They deliver some 6000 cubic yards of timber and 2000 tons of metal struts. They also carry some 700,000 miners to and from their work places.

The use of highly efficient mining equipment and the growing concentration of mining operations are unthinkable without improvements in these underground transport facilities. This means a transition to progressive, continuous process systems, the installation of many more conveyers, a wider use of automation and remote control.

We are not satisfied with the present rate of progress in this. We are calling for the manufacture of better conveyors

(Concluded on page 28)

District News

- BULLER -

Correspondent: BILL MILLER

New Year holiday period — The population of the Buller district must have trebled at this time. The weather was kind to everyone and there were only three days' rain over the three weeks and that was mostly during the night. From Charleston to Karamea the accommodation and camping facilities were truly tested. Each Christmas seems to bring more people to our district for their holidays and early in March they were still coming. The good weather is still holding: in fact some of our townships have water restrictions.

Fishing Competition — On Sunday, February 20, under wonderful conditions the Country Fishing Club held a one-day fishing competition at Cain's Beach, Birchfield. During the day a great variety of fish was caught, ranging in size from crab to stingray, with mullet, kawhai, and snapper in between. From 133 competitors over 300 lbs. of fish were caught, a good catch from such a small stretch of beach and the fish having to be cleaned before weighing.

Heaviest Catch—1st, John Poynter — 671 lb. Stingray; 2nd, W. Waldron — 14½ lb. snapper and 5 lb. kawhai; 3rd, C. Jack — 13½ lb. snapper.

The trophy for the smallest fish was won by Mrs Joe Mann. The competition for the biggest snapper caught during the season will close soon and it will be interesting to find out who caught the big one.

Personal — With the closing of Webb Mine at Christmas, a number of men have transferred to Denniston, some going to the Escarpment Mine and the rest to the Sullivan Mine. They have settled into their new jobs and are happy and satisfied with the change.

Engagements — Kevin Poynter and Carol Anderson.

Weddings — Gerald Herron to Julie Tippen; Peter Robertson to Jan Struthers.

Births — to John and Bev. Poynter, a daughter; Tom and Cath Cockfield, a daughter; Laurence and Yvonne Ward, a daughter; Dick and Barbara Beveridge, a son; Jim and Irene Hyslop, a daughter.

It is with regret that I record the passing of some of our oldest and respected citizens:

Mrs McMorran of Waimangaroa;
Owen Duffy, late of Waimangaroa,
Robert (Bob) Young Westport, late of Millerton;
Jack Sinclair of Westport;
Tom (Tassi) Grace of Millerton,
Mrs George Jones of Millerton, and
Mrs Walsh of Westport, late of Denniston.

Office News — John Poynter, the pay clerk at Ngakawau, won the Country Fishing Club one-day competition at Birchfield on February 20, with a 761 lb stingray. Congratulations, John!

BRIGHT FUTURE FOR COAL

(Concluded from page 27)

and of 14 and 28 ton electric locomotives, working both from batteries and from live rails. Over the past five years we have worked to extend the scope of all types of processing. Powerful new dressing plants were built and existing units reconstructed. In the five years these improvements alone increased coking and power coal yields by three per cent. In the five years 1971-75, the general capacity of plants is to be enlarged by 55½ million tons.

This will mean mechanised dressing of 60 per cent of the coal produced — 70 per cent if we include grading installations at mines. The coal industry uses a lot of labour. Wages account for nearly half of the mining costs. Productivity is, therefore, the number one problem.

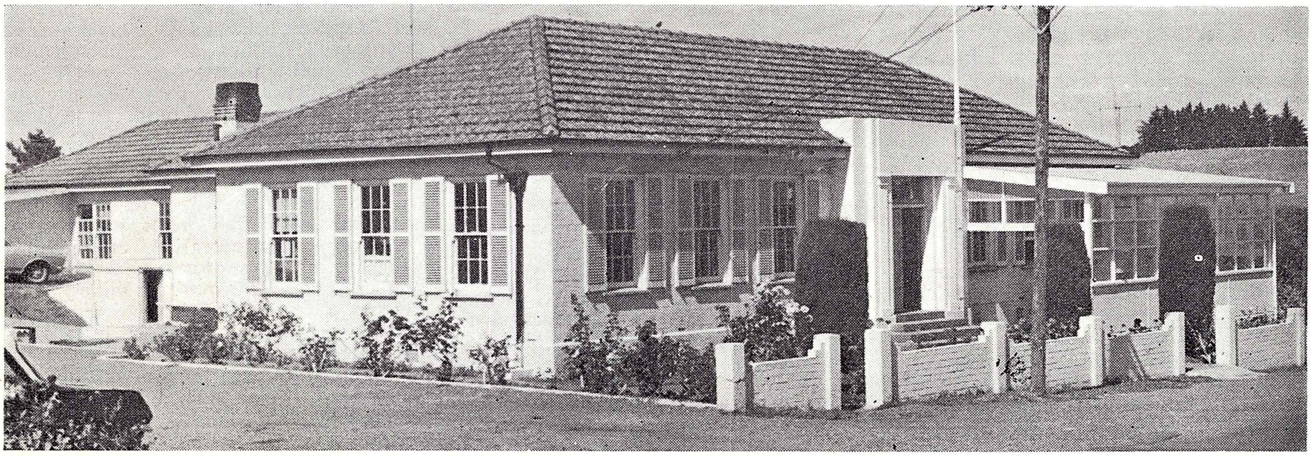
In the past five years, average productivity increased by 16.3 per cent, reaching 58½ tons per month per miner. Productivity in the coming five years is planned to increase by two-fifths, an annual rise of no less than seven per cent.

This will be largely achieved by raising the technical level and concentration of production and improving organisation. The five years 1971-75 will see a substantial growth in the opening of new capacity — amounting to 148 million tons.

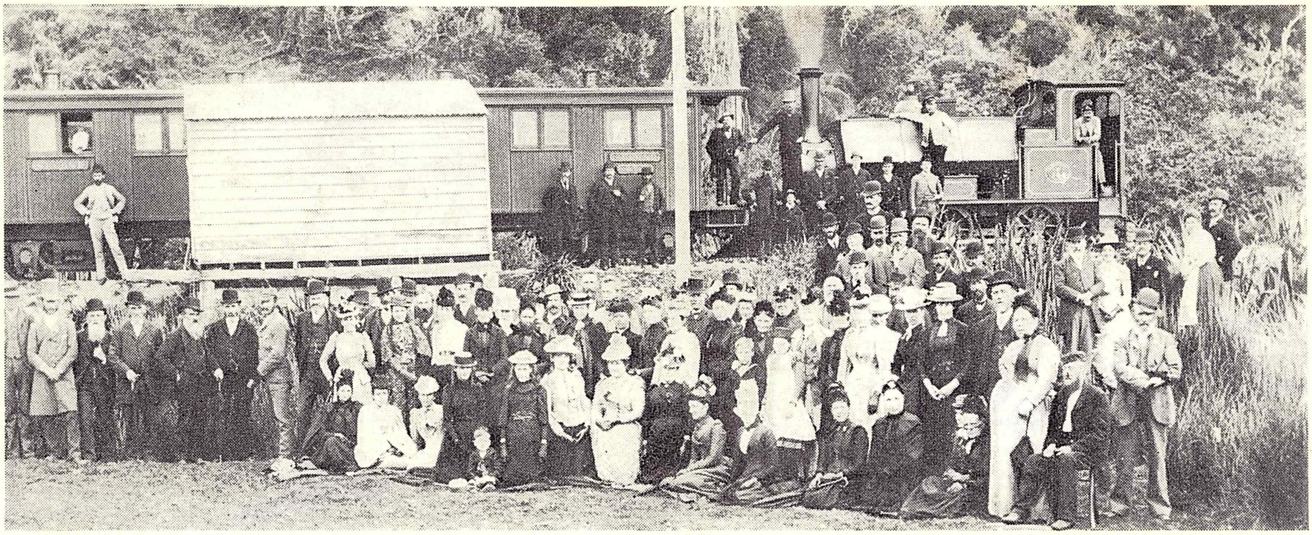
Productivity at the new mines will be three or four times that at existing pits. But this is just a start. It is now time to build mines with a rated capacity of 10-15 million tons of coal per year— 30,000-50,000 tons a day.

Improved output has resulted in the establishment of substantial economic incentive funds at the pits. The miners have a direct material interest in boosting production efficiency. Bonuses are geared to groups and sections and are based on the effective use of machinery, improved labour organisation and other similar factors.

Enterprises enjoy now great economic independence, especially in the organisation of production and labour planning and finance.



Flowers flourishing in the late summer around the Mines Department at Rotowaro, near Huntly. The flowers and neatly trimmed shrubs give the building an attractive appearance.



Westport excursionists at Granity Creek, November 28, 1891. This was the railway line built to take the coal from Denniston via the Incline for shipment at Wesport.

BOOK REVIEW:

"COALING FROM THE CLOUDS"

by R. J. Meyer

The New Zealand Railway and Locomotive Society Inc. 64 pages.

Although the famous Denniston Incline is no longer with us, we have a memorial to this masterpiece of Victorian colonial engineering in the history so capably and entertainingly written by R. J. Meyer. The Incline was regarded as the eighth wonder of the world by local people in the Buller when it was finished in 1879. Its history and detail are well documented in this book.

As would be expected in a Locomotive Society publication the railway history associated with transporting the coal from the hilltops at Denniston to the plain, and thence to the wharves at Westport, is related with good technical material but not in a way uninteresting to the more general reader. The initiative of private enterprise in developing the rich Buller coalfields (the only government assistance being the length of N.Z.R. line to connect the private railhead to Westport) shows in the buoyant eagerness with which work proceeded, and the character of the times — when people had no television, films or radio — is reflected in the anecdotes so aptly relieving the historical records.

The book takes the story through to the close of the Incline in 1969, and includes a bibliography and index. It is to be hoped that this timely publication will remind Buller people that they have much to be proud of in their colonial history and development.

The Commissioner for the West Coast, Mr D. B. Dallas, has been a keen advocate for the building of a model of the Incline at Westport before local memories grow too distant. Attention to the Incline through this book may help inspire Westport to undertake such a memorial to the coal industry of the past.

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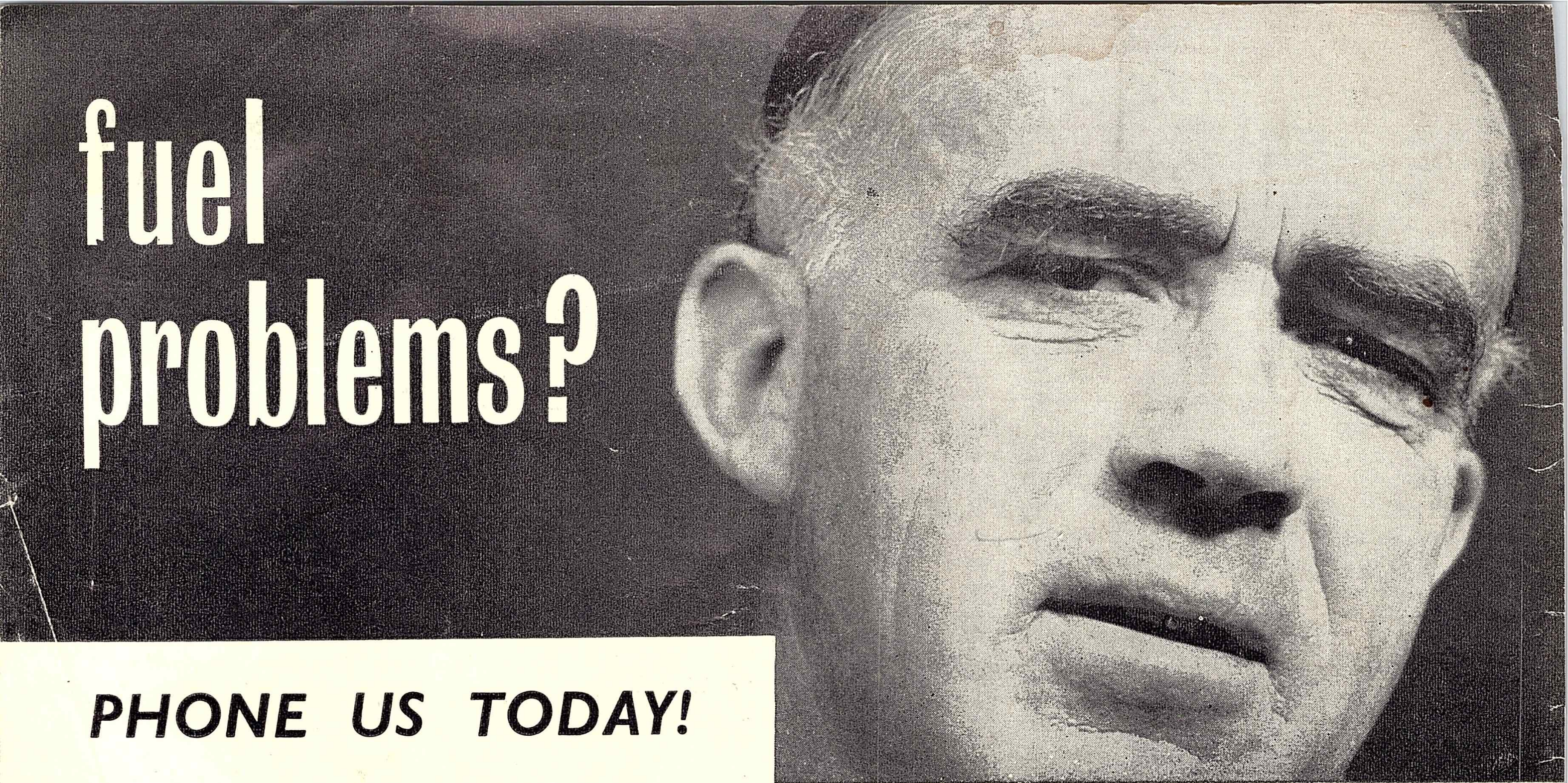

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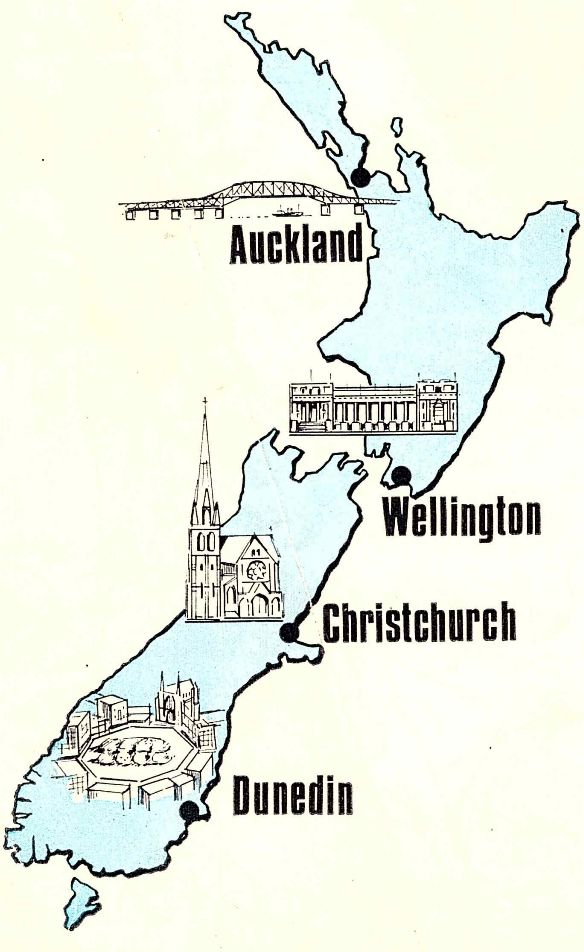

The fully qualified Fuel Technologists of the coal industry in New Zealand are readily available to Architects and Consulting Engineers planning for new or additional boiler plant. Their services are free and they will travel when necessary to any part of New Zealand for on-the-spot inspections. When you wish to obtain complete and up-to-the-minute information on the latest technological advances in coal burning, firing and storage, simply phone or write to your nearest coal industry Fuel Technologist.

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